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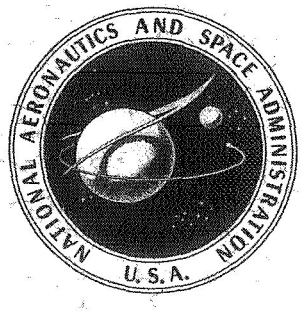
AVERAGE ENERGIES OF GROUND AND SINGLY AND DOUBLY EXCITED CONFIGURATIONS IN HIGHLY IONIZED ATOMS

ELECTRON NUMBERS N=3 to N=20

SHADMI and KASTNER



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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Yehuda Shadmi and Sidney O. Kastner

Goddard Space Flight Center, Greenbelt, Maryland

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FOREWORD

The numerical tables presented here originated from a desire to "map", albeit approximately, the important configurations of as many ions as possible. They may, for example, be of aid in the investigation of possibilities for interactions between configurations, or they may indicate when auto-ionization can exist. Their accuracy at present, though not as high as desirable, may be adequate for many applications. We plan to improve the calculations further in the future, perhaps by using different screening values.

The tables in this publication cover the range of electron number $3 \leq N \leq 20$ and atomic number $2N \leq Z \leq 2N + 20$. The complete set of tables on microfilm may be obtained from the Technical Information Division, Code 250, Goddard Space Flight Center, Greenbelt, Maryland 20771, as Item SP-3056-A; they cover the range $3 \leq N \leq 46$, $2N \leq Z \leq 92$. By far the vast majority of the ions and configurations listed, especially for higher Z, have not been observed and therefore must be said to be of only academic interest at present. In the meantime, it is hoped that individual parts of the tables will be useful to spectroscopists who study highly ionized atoms in plasmas, to astrophysicists who study solar and stellar coronas (our original motivation), and to others.

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by
Yehuda Shadmi* and Sidney O. Kastner
Goddard Space Flight Center

INTRODUCTION

Knowledge of the electronic configurations of highly ionized atoms is of increasing importance in fields such as astrophysics and plasma physics as modern developments make the radiations and interactions of these atoms accessible. For example, the investigation of far ultraviolet spectra arising from certain doubly excited configurations (auto-ionizing) is currently of interest.[1] Observational information is mainly contained in the compilation of Moore-Sitterly[2] and in the subsequent literature. From this work, it is seen that at the present time the ions of atoms with atomic numbers Z up to about 30 (Fe or Cu) have been fairly systematically explored, while information for ions of higher Z is much scarcer. On the theoretical side, relatively few calculations exist for configurations of the higher ionization stages of most atoms. Also, such calculations are difficult to carry out for the variety of configurations encountered in a given isoelectronic sequence, for example.

In this work, we have carried out a calculation of the average energies of very many configurations of spectroscopic interest, using a basis of orthogonalized screened hydrogenic radial functions. The energy of a "core" is calculated in a zeroth-order approximation (electronic interactions included implicitly through the screening parameters) and the energy of all other electrons is calculated in a first-order approximation (electronic interactions included explicitly as a perturbation). Configuration interactions and correlation energy contributions, as well as relativistic contributions, are not included, however. Results are presented for the ground configurations and for many singly and doubly excited configurations. Their accuracy is discussed in the last section.

SCREENED HYDROGENIC RADIAL FUNCTIONS

The hydrogenic radial function for a given nuclear charge Z is given by

$$u_{\mathrm{H}}(n, l, Z; r) = \left[\frac{Z(n-l-1)!}{n^2[(n+l)!]^3}\right]^{1/2} e^{-\rho/2}\rho^{l+1}L_{n+l}^{2l+1}(\rho), \tag{1}$$

*NASA NAS-NRC Senior Research Associate; Permanent Address: Hebrew University of Jerusalem.

where $\rho = 2Zr/n$ and $L_{n+l}^{2l+1}(\rho)$ is the associated Laguerre polynomial. Screened hydrogenic functions are obtained when Z is replaced by an effective nuclear charge $Z_{nl} \equiv Z - \sigma_{nl}$, where σ_{nl} is the total screening (to be defined below) experienced by an electron in the (nl) subshell. Such functions have been used by several authors in calculations of energy or transition integrals, e.g., Naqvi,[3] who makes use of screening parameters defined by Layzer.[4] Here we use screening parameters derived numerically by Froese[5] from Hartree-Fock calculations. These screening numbers σ_{nl} are defined by $Z - \sigma_{nl} = \bar{r}_H/\bar{r}_{nl}$, where $\bar{r}_{nl}$ is the mean radius obtained with the Hartree-Fock wave function and $\bar{r}_H$ is the mean radius of the corresponding hydrogen wave function. As $Z \to \infty$, $\bar{r} \to 0$, and the actual wave function $u(n, l, Z)$ becomes well approximated by $u_H(n, l, Z - \sigma_{nl}^0)$, where σ_{nl}^0 is the limiting value of σ_{nl}. Froese gives values of σ_{nl}^0 and of the limiting slope $\sigma_{nl}^1 = d\sigma/dr|_{\bar{r}=0}$ for essentially all configurations including electrons up to 7s. In her tables the rows refer to the screening subshells and the columns refer to the subshells experiencing the screening. An actual value in a given row is the sum of the screening by the corresponding subshell and the accumulated screening by all inner subshells. The table entries thus result from a definite choice of the filling-up order of the various subshells and also from the assumption that all inner subshells are completely filled. For the purpose of the present work, however, the tables were recalculated so that individual entries gave the screening due to separate electrons. σ_{nl}^0 and σ_{nl}^1 are obtained from these rearranged tables for all the subshells of a given configuration. Screening values for a finite Z were then computed by the linear formula

$$\sigma_{nl}(Z) = \sigma_{nl}^0 + \sigma_{nl}^1 \cdot \bar{r}_H\left(Z - \sigma_{nl}^0\right), \tag{2a}$$

in which $\bar{r}_H\left(Z - \sigma_{nl}^0\right)$ is the mean radius of the screened hydrogenic function of the nuclear charge $Z - \sigma_{nl}^0$:

$$\bar{r}_H\left(Z - \sigma_{nl}^0\right) = \frac{3n^2 - l(l+1)}{2\left(Z - \sigma_{nl}^0\right)}. \tag{2b}$$

That is, the zeroth-order σ^0 is used to provide a first-order correction to itself. This gives a consistent approximation for the mean radius of the actual function: for small Z the mean radius is greater than the hydrogenic value, while for large Z it approaches the hydrogenic value, as it should.

The screened hydrogenic functions $u_H(n, l, Z - \sigma_{nl}^0)$ form a basis that can be an excellent starting point for perturbation calculations for highly ionized atoms. Integrals involving these functions can be conveniently computed analytically. However, two such functions with the same l and different n's are not orthogonal to each other because their effective charges Z_{nl} are different. The procedure adopted here was to orthogonalize such functions in pairs; this procedure and its calculational consequences are described below. (A general procedure for the use of a nonorthogonal basis is discussed by Slāter,[6] but it is more involved in application.) The approximate many-electron functions essentially used here are Slater determinants of these "orthogonalized screened hydrogenic" one-electron functions.

AVERAGE ENERGY OF A CONFIGURATION

Throughout, "subshell" and "radial function" will be considered synonymous.

(A) Core Subshells: All subshells that are filled and have n's different from the n's of all unfilled subshells are taken to constitute a core. (An electron in such a subshell will be referred to as a "core

electron.") Such subshells will be denoted by u^c_{nl}. The energy of the core is assumed to be given by the simple expression

$$E_c = \sum_{nl} \frac{q_{nl} Z^2_{nl}}{2n^2}. \tag{3}$$

Here, q_{nl} is the occupation number of subshell u^c_{nl}, $Z_{nl} \equiv Z - \sigma^c_{nl}$ is the effective charge for the subshell, and the summation is over all core subshells.

(B) Explicitly Treated Subshells: These include all subshells u_{nl} other than the core subshells defined above. (An electron belonging to such a subshell will be referred to as an "explicitly treated electron.") To calculate the contribution of these subshells we use the following model: The explicitly treated electrons move in an approximate Coulomb field created by the effective charge $Z_e = Z - \bar{\sigma}$, where $\bar{\sigma}$ is the average screening due to the core electrons. Thus, the Hamiltonian for such electrons will include their interaction with this Coulomb field and their mutual electrostatic interactions as well. It will have the form

$$H = \sum_i -\frac{1}{2}\nabla^2_i - \frac{Z_e}{r_i} + \sum_{i<j} \frac{1}{r_{ij}}, \tag{4a}$$

where the indices i and j run over all the explicitly treated electrons. The expectation values of the first and second terms are the one-electron and the two-electron energies, respectively. First we give energy expressions for the case in which all the screened hydrogenic functions are orthogonal.

(1) One-electron energy: A straightforward calculation gives the energy contributed by an electron in the nl subshell:

$$E^{(1)}_{nl} = -\frac{Z^2_e - S^2_{nl}}{2n^2}, \tag{4b}$$

in which S_{nl} is defined as $S_{nl} \equiv Z_e - Z_{nl}$.

(2) Electron-pair interaction energies: Expressions for the average energy of interaction between electrons in two subshells (l, l') are given by Slater.[7] For equivalent subshells (l, l) the integrals $F^k(l, l)$, in which the common screening parameter is an independent scale factor, are readily computed, and Slater's formulas (14–23) can be reduced to a common list of available values. For nonequivalent subshells (l, l'), the integrals $F^k(l, l')$ and $G^k(l, l')$ needed in Slater's formulas (14–25) are supplied by the computer program when required.

(C) Nonorthogonal Subshells: If two radial functions $u_1 \equiv u_{n_1 l}$ and $u_2 \equiv u_{n_2 l}$ are nonorthogonal, the Schmidt orthogonalization process is used to form a new function u'_1:

$$u'_1 = c_1 u_1 + c_2 u_2, \tag{5}$$

in which $c_1 = (1 - d^2)^{-1/2}$, $c_2 = -d(1 - d^2)^{-1/2}$, and d is the overlap integral $\int u_1 u_2 dr$. This has two effects in the calculation of the energy of a configuration: It introduces cross-terms in the one-electron energy

expression (4b), and it modifies the radial integrals F^k and G^k required in the electron-pair interaction energies. The required changes are as follows:

(1) One-electron energy: With the insertion of (5), the matrix element of the potential energy of the electron occupying the subshell u' becomes

$$-\langle u'_1\left|\frac{Z_e}{r}\right|u'_1\rangle = c_1^2\frac{Z_e Z_{n'l}}{(n')^2} + c_2^2\frac{Z_e Z_{nl}}{n^2} + 2c_1c_2\langle u_1\left|\frac{Z_e}{r}\right|u_2\rangle . \tag{6}$$

Similarly, the matrix element of kinetic energy becomes

$$\langle u'_1|\nabla^2|u'_1\rangle = c_1^2\frac{Z_{n'l}^2}{2(n')^2} + c_2^2\frac{Z_{nl}^2}{2n^2} + c_1c_2\langle u_1|\nabla^2|u_2\rangle . \tag{7}$$

The sum of these may be written as

$$E^{(1)}(u'_1) = -c_1^2\left[\frac{Z_e^2 - S_{n'l}^2}{2(n')^2}\right] - c_2^2\left[\frac{Z_e^2 - S_{nl}^2}{2n^2}\right] + c_1c_2\left[\langle u_1|\nabla^2|u_2\rangle - 2Z_e\langle u_1\left|\frac{1}{r}\right|u_2\rangle\right] . \tag{8}$$

The matrix elements of the operator $1/r$ and the overlap integral d are directly evaluated by the computer program; the matrix elements of ∇^2 are also evaluated by means of a relation due to Freeman and Lowdin, which is quoted by Slater:[8]

$$\int_0^\infty u_1^*(\nabla^2)u_2 dr = -\int_0^\infty r^{2l+2}\frac{d}{dr}\left(\frac{u_1^*}{r^l}\right)\frac{d}{dr}\left(\frac{u_2}{r^l}\right)dr . \tag{9}$$

It may be checked that the sum of the one-electron energies of a pair of originally nonorthogonal functions remains unchanged if the roles of the mutually orthogonalized functions are interchanged.

(2) Electron-pair interaction energy: The general radial integrals formed from the screened hydrogenic functions may be written as $R^k(n_1l_1; n_2l_2; n_3l_3; n_4l_4)$. The computer program calculates these directly. If, however, any of the functions (nl) is paired with another to produce orthogonality, the integral must be modified to include the partner(s); it becomes a linear combination of up to 16 individual integrals, as follows (denoted by RM^k):

$$RM^k = \sum_{p=1}^{2}\sum_{q=1}^{2}\sum_{r=1}^{2}\sum_{s=1}^{2} c_{1p}c_{2q}c_{3r}c_{4s}R^k(n_{1p}l_1; n_{2q}l_2; n_{3r}l_3; n_{4s}l_4) , \tag{10}$$

in which the coefficients are defined as in equation (5). The computer program automatically computes the R^k's required in formula (10). It may be noted that in equation (5) one has a choice of which member of a pair to modify while leaving the other unchanged. In practice, a negligible difference was found in the final result (typically 0.01% or less); the function of larger n was modified throughout the present work.

DISCUSSION OF THE TABLES

For a given electron number N, a list of low-lying configurations was produced by the formation of the ground configuration first and then of successive configurations that differed from the ground configuration in one electron and in two electrons. The configuration list is numbered; parity is also indicated in the table. The singly excited configurations include all those in which electrons are excited up to subshells as high as $7s$, with the exception of subshells $5g$, $6f$, $6g$, and $6h$, which were not included in the Froese screening tables. For the purpose of limiting the total number of configurations for a given N to the order of 100, the doubly excited configurations were limited to those in which one electron is excited up to the maximum of $7s$ and the other is excited to the lowest unoccupied subshell; one of the electrons can "jump" only from a subshell with the same n as that of the outer subshell. The energies of these configurations, listed by number, were then successively calculated for given Z values; the range of Z was chosen to include values from $2N$ to 92, so that all ions more than half ionized would be included. In this publication we give the energy values calculated for values of Z from $2N$ to $2N + 20$.

As an example, if we wish to look up the average energy of the doubly excited configuration $1s^2 2p^2 3s^2$ in the ion Zn^{+24}–i.e., $Z = 30$, $N = 6$–we find that this configuration is numbered 51 in the list of Table 5(a); then in Table 5(b), the average energy is found to be (–) 1148.2 atomic units.

An asterisk after a configuration number indicates that orthogonalization was not carried out because three or more "explicitly treated subshells" were not orthogonal to each other. In such a case, the non-orthogonal basis was used directly for the energy calculation. Fortuitously, the accuracy of such energy values has turned out to be slightly better in practice than for those obtained by the more rigorous method.

The calculation does not include configuration interaction and relativistic and correlation contributions to the energy of a configuration. These latter contributions, discussed for example by Froman[9] and Clementi,[10] are in general both negative and thus will increase the absolute magnitude of the calculated energies.

A comparison of the tabulated values may be made with observed values and with values calculated by by others, in a few cases. For example, Condon and Odabasi[11] have obtained energies of low-lying configurations in some ions of the sequences $N = 4$, 5, 6, 7, and 8; these authors made use of the Hartree-Fock-Slater self-consistent field method. Table 1 compares our values with theirs for some 8-electron ions more than half-ionized. Actual ground configuration energies, with ionization potentials deduced by Lotz[12] from observed data, are included in the table as are some approximate energies of excited configurations obtained from AEL.[2] Our values differ from the observed values by about 1.3% at $Z = 16$ and by 1.0% at $Z = 20$. The

Table 1–Comparison of Present Screened Hydrogenic Values (SH) for $N = 8$, with Values Calculated by Condon and Odabasi (CO) and with Observed Values (OB)

Configuration	$Z = 16$			$Z = 17$			$Z = 18$			$Z = 19$			$Z = 20$		
	SH	CO	OB	SH	CO	OB	SH	CO	OB	SH	CO	OB	SH	CO	OB
$1s^2 2s^2 2p^4$	363.6	365.1	368.1	415.4	417.2	419.1	470.8	472.7	475.1	529.7	531.8	534.7	592.1	594.4	597.9
$1s^2 2s^2 2p^3 3s$	356.0	356.8	359.6	406.4	407.3	409.1	460.1	461.1		517.2	518.3		577.6	578.8	
$1s^2 2s^2 2p^3 3p$	354.6	356.3		404.8	406.7		458.4	460.5		515.3	517.6		575.6	578.1	
$1s^2 2s^2 2p^3 3d$	353.8	355.7	358.4	403.9	406.0	407.7	457.4	459.7		514.3	516.7		574.5	577.2	

relative errors in the differences between the energy values, which are the observed quantities, will be much greater, of course. The maximum discrepancies occur for energy differences between closed shell configurations and configurations with several explicitly treated electrons; these two extremes are treated in substantially different ways, as noted above. The screened hydrogenic approximation will improve still further, however, for higher Z's, and the energy differences should become more reasonable.

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THE TABLES FOR N = 3 TO N = 20*

*In the course of publication it has been found that the values for configurations with outer 5s electrons are in error. These values will be corrected in subsequent publications.

TABLE 2(a)–CONFIGURATION LIST FOR 3 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S 2S 2P 3S 3P 3D 4S 4P 4D 4F 5S 5P 5D 5F 6S 6P 6D 7S
GROUND CONFIGURATION		
1		2 1
ONE-ELECTRON EXCITED CONFIGURATIONS		
2	ODD	2 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3		2 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4	EVEN	2 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5		2 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
6		2 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
7	ODD	2 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
8		2 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
9	ODD	2 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
10		2 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
11	ODD	2 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
12		2 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
13	ODD	2 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
14		2 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
15	ODD	2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
16		2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
17		2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
18		2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
19	ODD	1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
20		1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
21	ODD	1 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
22		1 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
23		1 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
24	ODD	1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
25		1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
26	ODD	1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
27		1 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
28	ODD	1 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
29		1 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
30	ODD	1 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
31		1 1 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
32	ODD	1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
33		1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
34		1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
TWO-ELECTRON EXCITED CONFIGURATIONS		
35		1 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
36	EVEN	1 0 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
37		1 0 1 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0
38	ODD	1 0 1 0 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0
39	ODD	1 0 1 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 0
40		1 0 1 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0
41	ODD	1 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0
42		1 0 1 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0
43	ODD	1 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0
44		1 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0
45	ODD	1 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 1
46		1 0 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
47	ODD	1 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
48		1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
49	ODD	1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
50	ODD	1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0

TABLE 2(b)–3 ELECTRONS

CONFIG	Z= 6	Z= 7	Z= 8	Z= 9	Z=10	Z=11	Z=12
1	34.3	47.8	63.6	81.6	101.9	124.5	149.2
2	33.8	47.2	62.9	80.7	100.8	123.2	147.8
3	32.7	45.5	60.4	77.5	96.6	117.9	141.2
4	32.5	45.3	60.2	77.2	96.3	117.5	140.8
5	32.5	45.2	60.1	77.1	96.2	117.4	140.7
6	32.2	44.8	59.4	76.0	94.8	115.6	138.5
7	32.1	44.7	59.3	75.9	94.7	115.4	138.3
8	32.1	44.6	59.2	75.9	94.6	115.4	138.2
9	32.1	44.6	59.2	75.9	94.6	115.4	138.2
10	32.0	44.4	58.9	75.4	94.0	114.6	137.2
11	31.9	44.4	58.8	75.4	93.9	114.5	137.1
12	31.9	44.4	58.8	75.3	93.9	114.5	137.1
13	31.9	44.4	58.8	75.3	93.9	114.5	137.1
14	31.9	44.2	58.7	75.1	93.6	114.0	136.6
15	31.8	44.2	58.6	75.1	93.5	114.0	136.5
16	31.8	44.2	58.6	75.0	93.5	114.0	136.5
17	31.8	44.1	58.5	74.9	93.3	113.7	136.2
18	24.3	33.6	44.3	56.6	70.4	85.7	102.5
19	23.8	32.9	43.6	55.8	69.4	84.6	101.3
20*	22.5	30.9	40.8	51.9	64.5	78.4	93.7
21	22.3	30.8	40.6	51.8	64.3	78.2	93.5
22	22.3	30.7	40.5	51.7	64.2	78.1	93.3
23*	22.0	30.2	39.7	50.6	62.7	76.2	91.0
24	21.9	30.1	39.6	50.5	62.6	76.1	90.9
25	21.9	30.1	39.6	50.4	62.6	76.1	90.8

TABLE 2(b) (CONTINUED)

CONFIG	Z= 6	Z= 7	Z= 8	Z= 9	Z=10	Z=11	Z=12
26	21.9	30.1	39.6	50.4	62.6	76.0	90.8
27	21.7	29.8	39.2	49.9	61.9	75.1	89.7
28	21.7	29.8	39.2	49.9	61.9	75.2	89.7
29	21.7	29.8	39.2	49.9	61.9	75.1	89.7
30	21.7	29.8	39.2	49.9	61.8	75.1	89.7
31*	21.6	29.7	39.2	49.6	61.4	74.7	89.1
32	21.6	29.7	39.0	49.6	61.5	74.6	89.1
33	21.6	29.6	39.0	49.6	61.5	74.6	89.1
34*	21.6	29.5	38.8	49.9	60.6	74.3	89.4
35	23.5	32.6	43.2	55.3	68.9	84.0	100.6
36	22.2	30.6	40.4	51.6	64.1	78.0	93.2
37	22.1	30.5	40.3	51.5	64.0	77.8	93.0
38	22.1	30.5	40.3	51.4	63.9	77.7	92.9
39	21.7	29.9	39.4	50.2	62.4	75.8	90.5
40	21.7	29.9	39.4	50.2	62.3	75.7	90.5
41	21.7	29.9	39.4	50.2	62.3	75.7	90.4
42	21.7	29.9	39.3	50.1	62.2	75.7	90.4
43	21.5	29.6	38.9	49.6	61.5	74.8	89.3
44	21.5	29.6	39.0	49.6	61.6	74.8	89.3
45	21.5	29.6	38.9	49.6	61.5	74.8	89.3
46	21.5	29.6	38.9	49.6	61.5	74.8	89.3
47	21.4	29.4	38.7	49.3	61.2	74.3	88.7
48	21.4	29.4	38.7	49.3	61.1	74.3	88.7
49	21.4	29.4	38.7	49.3	61.1	74.3	88.7
50	21.6	29.5	38.8	49.5	60.9	74.0	88.2

TABLE 2(b) (CONTINUED)

CONFIG	Z=13	Z=14	Z=15	Z=16	Z=17	Z=18	Z=19
1	176.3	205.6	237.1	270.9	306.9	345.2	385.8
2	174.7	203.8	235.1	268.7	304.6	342.7	383.1
3	166.7	194.3	224.0	255.8	289.7	325.7	363.9
4	166.3	193.8	223.5	255.2	289.1	325.1	363.2
5	166.1	193.6	223.3	255.0	288.9	324.8	362.9
6	163.4	190.4	219.4	250.6	283.7	319.0	356.3
7	163.2	190.2	219.2	250.3	283.5	318.7	356.0
8	163.1	190.1	219.1	250.2	283.4	318.6	355.9
9	163.1	190.1	219.1	250.2	283.4	318.6	355.9
10	161.9	188.6	217.4	248.2	281.0	315.9	352.8
11	161.8	188.5	217.3	248.1	280.9	315.8	352.7
12	161.8	188.5	217.2	248.0	280.9	315.7	352.6
13	161.8	188.5	217.2	248.0	280.9	315.7	352.6
14	161.1	187.7	216.3	246.9	279.6	314.3	351.0
15	161.1	187.6	216.2	246.9	279.5	314.2	350.9
16	161.0	187.6	216.2	246.8	279.5	314.2	350.9
17	160.6	187.1	215.6	246.2	278.7	313.3	349.9
18	120.7	140.5	161.8	184.6	208.8	234.6	261.9
19	119.5	139.1	160.3	183.0	207.1	232.8	260.0
20*	110.3	128.3	147.7	168.4	190.5	213.9	238.7
21	110.1	128.1	147.4	168.1	190.2	213.6	238.4
22	109.9	127.9	147.2	167.9	189.9	213.3	238.1
23*	107.1	124.5	143.2	163.3	184.6	207.3	231.3
24	107.0	124.4	143.1	163.1	184.5	207.1	231.1
25	106.9	124.3	143.0	163.0	184.4	207.0	231.0

TABLE 2(b) (CONTINUED)

CONFIG	Z=13	Z=14	Z=15	Z=16	Z=17	Z=18	Z=19
26	106.9	124.3	143.0	163.0	184.3	207.0	230.9
27	105.5	122.7	141.1	160.8	181.8	204.1	227.7
28	105.6	122.7	141.1	160.9	181.9	204.2	227.8
29	105.5	122.7	141.1	160.8	181.8	204.1	227.7
30	105.5	122.7	141.1	160.8	181.8	204.1	227.7
31*	104.8	121.8	140.2	159.7	180.5	202.6	226.0
32	104.8	121.9	140.1	159.6	180.5	202.6	225.9
33	104.8	121.8	140.1	159.6	180.4	202.5	225.9
34*	103.9	121.1	139.6	157.8	180.9	200.3	225.2
35	118.7	138.3	159.4	182.1	206.2	231.8	258.9
36	109.8	127.7	147.1	167.8	189.8	213.2	238.0
37	109.6	127.6	146.9	167.5	189.5	212.9	237.7
38	109.5	127.4	146.7	167.4	189.4	212.8	237.5
39	106.6	124.0	142.7	162.7	184.0	206.6	230.6
40	106.5	123.9	142.6	162.6	183.9	206.5	230.4
41	106.5	123.9	142.5	162.5	183.8	206.4	230.4
42	106.4	123.8	142.5	162.5	183.8	206.4	230.3
43	105.1	122.2	140.6	160.3	181.3	203.5	227.1
44	105.1	122.2	140.6	160.3	181.3	203.6	227.1
45	105.1	122.2	140.6	160.3	181.3	203.5	227.1
46	105.1	122.2	140.6	160.3	181.2	203.5	227.0
47	104.4	121.4	139.6	159.1	179.9	202.0	225.3
48	104.4	121.3	139.6	159.1	179.9	202.0	225.3
49	104.4	121.3	139.6	159.1	179.9	201.9	225.3
50	104.0	120.7	139.0	158.1	179.9	200.8	225.0

TABLE 2(b) (CONTINUED)

CONFIG	Z=20	Z=21	Z=22	Z=23	Z=24	Z=25	Z=26
1	428.5	473.6	520.9	570.4	622.2	676.2	732.5
2	425.7	470.5	517.6	567.0	618.6	672.5	728.6
3	404.1	446.5	490.9	537.5	586.2	637.0	689.9
4	403.4	445.7	490.1	536.6	585.3	636.0	688.9
5	403.1	445.4	489.9	536.4	585.0	635.8	688.6
6	395.7	437.1	480.6	526.1	573.7	623.4	675.2
7	395.4	436.8	480.3	525.8	573.4	623.1	674.8
8	395.2	436.7	480.1	525.7	573.2	622.9	674.6
9	395.2	436.6	480.1	525.6	573.2	622.9	674.6
10	391.8	432.8	475.8	520.9	568.0	617.2	668.4
11	391.6	432.6	475.7	520.7	567.9	617.0	668.2
12	391.6	432.6	475.6	520.7	567.8	616.9	668.1
13	391.6	432.6	475.6	520.7	567.8	616.9	668.1
14	389.7	430.5	473.3	518.1	565.0	613.9	664.8
15	389.7	430.4	473.2	518.0	564.9	613.8	664.7
16	389.6	430.4	473.2	518.0	564.8	613.7	664.6
17	388.5	429.1	471.8	516.5	563.1	611.9	662.6
18	290.7	320.9	352.7	386.0	420.8	457.0	494.8
19	288.6	318.8	350.5	383.6	418.3	454.5	492.2
20*	264.9	292.4	321.3	351.6	383.2	416.1	450.5
21	264.5	292.0	320.9	351.1	382.7	415.7	450.0
22	264.2	291.7	320.6	350.8	382.4	415.3	449.6
23*	256.5	283.1	311.1	340.3	370.8	402.7	435.8
24	256.4	283.0	310.9	340.1	370.6	402.5	435.6
25	256.3	282.9	310.8	340.0	370.5	402.3	435.5

TABLE 2(b) (CONCLUDED)

CONFIG	Z=20	Z=21	Z=22	Z=23	Z=24	Z=25	Z=26
26	256.2	282.8	310.7	339.9	370.4	402.2	435.4
27	252.6	278.8	306.2	335.0	365.0	396.3	428.9
28	252.6	278.8	306.3	335.0	365.1	396.4	429.0
29	252.6	278.8	306.2	335.0	365.0	396.3	428.9
30	252.6	278.7	306.2	334.9	365.0	396.3	428.9
31*	250.8	276.6	303.9	332.4	362.2	393.3	425.5
32	250.6	276.6	303.7	332.2	362.0	393.1	425.5
33	250.6	276.5	303.8	332.2	362.0	393.1	425.4
34*	249.0	274.6	302.8	330.5	360.3	390.2	422.2
35	287.5	317.6	349.2	382.3	416.9	453.0	490.6
36	264.1	291.6	320.4	350.6	382.2	415.1	449.4
37	263.8	291.3	320.1	350.3	381.8	414.7	449.0
38	263.6	291.1	319.9	350.1	381.6	414.5	448.8
39	255.8	282.4	310.2	339.4	369.9	401.7	434.9
40	255.7	282.2	310.1	339.3	369.8	401.6	434.7
41	255.6	282.2	310.0	339.2	369.7	401.5	434.6
42	255.5	282.1	309.9	339.1	369.6	401.4	434.5
43	251.9	278.0	305.5	334.2	364.2	395.5	428.1
44	252.0	278.1	305.5	334.2	364.2	395.5	428.1
45	251.9	278.0	305.5	334.2	364.2	395.5	428.1
46	251.9	278.0	305.4	334.1	364.1	395.4	428.0
47	250.0	276.0	303.0	331.5	361.3	392.3	424.6
48	250.0	275.8	303.0	331.5	361.2	392.3	424.5
49	249.9	275.8	303.0	331.5	361.2	392.2	424.5
50	248.3	274.3	301.8	329.8	360.2	390.7	422.5

TABLE 3(a)–CONFIGURATION LIST FOR 4 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S	2S	2P	3S	3P	3D	4S	4P	4D	4F	5S	5P	5D	5F	6S	6P	6D	7S
GROUND CONFIGURATION																			
1		2	2																
ONE-ELECTRON EXCITED CONFIGURATIONS																			
2	ODD	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3		2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	ODD	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5		2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6		2	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
7	ODD	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8		2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
9	ODD	2	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
10		2	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
11	ODD	2	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
12		2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
13	ODD	2	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
14		2	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
15	ODD	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
16		2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
17		2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
18	ODD	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19		1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	ODD	1	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
21		1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
22		1	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
23	ODD	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
24		1	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
25	ODD	1	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
26		1	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
27	ODD	1	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
28		1	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
29	ODD	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
30		1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
31	ODD	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
32		1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
33		1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TWO-ELECTRON EXCITED CONFIGURATIONS																			
34		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35		1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	ODD	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	ODD	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38		2	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
39		1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
40	ODD	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
41	ODD	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
42	ODD	2	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
43	ODD	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
44		2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
45		1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
46	ODD	2	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
47	ODD	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0

TABLE 3(a) (CONCLUDED)

48		2	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
49		1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
50	000	2	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
51	000	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
52		2	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
53		1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
54	000	2	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
55	000	1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
56		2	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
57		1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
58	000	2	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
59	000	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
60		2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
61		1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
62	000	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
63	000	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
64	000	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
65	000	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

TABLE 3(b)–4 ELECTRONS

CONFIG	Z= 8	Z= 9	Z=10	Z=11	Z=12	Z=13	Z=14
26	39.6	51.5	64.9	79.8	96.3	114.3	133.9
27	38.4	50.3	63.6	78.5	94.9	112.8	132.3
28	37.3	49.0	62.3	77.1	93.4	111.2	130.6
29	37.1	48.7	61.8	76.4	92.6	110.3	129.6
30	38.2	50.0	63.2	78.1	94.3	112.2	131.6
31	37.6	49.3	62.5	77.3	93.5	111.4	130.7
32	37.3	48.9	62.0	76.7	92.8	110.5	129.7
33	37.8	49.6	62.9	77.6	93.9	111.7	131.0
34	56.6	85.9	107.6	131.9	158.7	188.0	219.8
35	47.5	61.3	76.8	94.0	113.0	133.8	156.3
36	64.8	83.3	104.3	127.6	153.2	181.2	211.5
37*	45.4	58.3	72.7	88.8	106.5	125.8	146.7
38	64.4	82.9	103.7	126.9	152.5	180.5	210.8
39	45.2	58.0	72.5	88.5	106.2	125.4	146.3
40	64.2	82.7	103.5	126.7	152.2	180.1	210.4
41	45.0	57.8	72.3	88.3	105.9	125.2	146.0
42	63.9	82.1	102.7	125.6	150.7	178.2	208.0
43*	44.6	57.1	71.2	86.9	104.1	122.9	143.3
44	63.6	81.8	102.3	125.2	150.3	177.8	207.5
45	44.5	57.0	71.1	86.8	104.0	122.8	143.1
46	63.6	81.7	102.2	125.0	150.1	177.6	207.3
47	44.4	56.9	71.0	86.7	103.9	122.6	143.0
48	63.5	81.7	102.2	125.0	150.1	177.5	207.3
49	44.4	56.9	71.0	86.6	103.8	122.6	142.9
50	63.5	81.5	101.9	124.6	149.6	176.8	206.4

TABLE 3(b) (CONTINUED)

CONFIG	Z= 8	Z= 9	Z=10	Z=11	Z=12	Z=13	Z=14
51	44.1	56.5	70.4	85.9	102.9	121.5	141.6
52	63.3	81.3	101.7	124.3	149.3	176.5	206.0
53	44.2	56.6	70.5	86.0	103.0	121.6	141.7
54	63.2	81.3	101.6	124.3	149.2	176.4	205.9
55	44.1	56.5	70.4	85.9	102.9	121.5	141.6
56	63.2	81.3	101.6	124.2	149.2	176.4	205.9
57	44.1	56.5	70.4	85.9	102.9	121.5	141.5
58	63.3	81.3	101.6	124.2	149.0	176.1	205.6
59*	44.0	56.5	70.2	85.5	102.7	120.9	141.0
60	63.2	81.1	101.4	124.0	148.8	175.9	205.3
61	44.0	56.4	70.1	85.6	102.5	120.9	140.9
62	63.1	81.1	101.3	123.9	148.7	175.8	205.1
63	44.0	56.3	70.1	85.5	102.4	120.8	140.8
64	63.1	81.1	101.4	123.8	148.7	175.9	205.1
65*	44.2	56.1	70.3	85.4	101.2	121.4	139.9

TABLE 3(b) (CONTINUED)

CONFIG	Z=15	Z=16	Z=17	Z=18	Z=19	Z=20	Z=21
1	260.3	297.6	337.4	379.7	424.6	471.9	521.7
2	256.4	293.4	332.9	374.9	419.4	466.4	515.9
3	245.9	281.1	318.7	358.7	401.0	445.7	492.8
4	245.0	280.1	317.7	357.6	399.8	444.4	491.4
5	244.5	279.6	317.1	356.9	399.2	443.7	490.7
6	241.8	276.1	313.0	352.2	393.7	437.5	483.6
7	241.0	275.5	312.3	351.5	392.9	436.7	482.8
8	240.7	275.2	312.0	351.1	392.6	436.3	482.4
9	240.6	275.1	311.9	351.1	392.5	436.2	482.3
10	239.5	273.7	310.3	349.1	390.2	433.6	479.3
11	239.1	273.3	309.8	348.6	389.7	433.1	478.8
12	238.9	273.2	309.7	348.4	389.5	432.9	478.6
13	238.9	273.1	309.6	348.4	389.5	432.8	478.5
14	238.5	272.6	309.0	347.5	388.6	431.6	477.1
15	238.2	272.3	308.5	347.2	388.1	431.2	476.7
16	238.0	272.1	308.4	347.0	387.9	431.0	476.5
17	238.0	272.1	307.2	347.5	386.9	430.4	477.6
18	181.2	207.3	235.1	264.6	295.9	329.0	363.8
19	164.1	187.9	213.4	240.4	269.1	299.4	331.3
20	161.9	185.7	211.0	237.9	266.5	296.6	328.4
21	159.7	183.3	208.5	235.3	263.8	293.8	325.5
22	157.7	180.7	205.3	231.5	259.2	288.5	319.4
23	156.3	179.3	203.8	229.8	257.5	286.7	317.4
24	154.1	176.9	201.3	227.3	254.8	283.8	314.4
25	152.4	175.1	199.4	225.2	252.5	281.5	312.0

TABLE 3(b) (CONTINUED)

CONFIG	Z=15	Z=16	Z=17	Z=18	Z=19	Z=20	Z=21
26	155.0	177.7	201.8	227.6	254.8	283.6	314.0
27	153.4	175.9	200.6	225.7	252.9	281.6	311.9
28	151.6	174.0	198.6	223.6	250.7	279.3	309.4
29	150.4	172.8	196.7	222.2	249.2	277.7	307.8
30	152.4	175.0	199.0	224.3	251.5	279.9	310.0
31	151.5	173.9	197.7	223.2	250.1	278.6	308.6
32	150.5	172.8	196.5	221.9	248.7	277.1	307.0
33	151.5	173.8	197.7	223.2	249.8	278.6	308.5
34	254.1	290.9	330.2	372.0	416.3	463.1	512.4
35	180.5	206.5	234.2	263.7	294.9	327.9	362.7
36	244.3	279.4	316.9	356.7	398.9	443.4	490.3
37*	169.2	193.3	219.1	246.4	275.4	305.9	338.1
38	243.4	278.5	315.8	355.6	397.7	442.1	488.9
39	168.8	192.9	218.6	246.0	274.9	305.4	337.6
40	243.0	278.0	315.4	355.1	397.1	441.6	488.4
41	168.5	192.6	218.3	245.6	274.5	305.0	337.1
42	240.2	274.6	311.3	350.4	391.8	435.4	481.4
43*	165.2	188.7	213.7	240.3	268.5	298.2	329.5
44	239.6	274.0	310.7	349.7	391.0	434.7	480.6
45	165.0	188.5	213.5	240.1	268.3	298.0	329.3
46	239.4	273.7	310.4	349.4	390.7	434.3	480.3
47	164.9	188.3	213.4	239.9	268.1	297.8	329.1
48	239.3	273.7	310.3	349.3	390.6	434.2	480.2
49	164.8	188.2	213.3	239.8	268.0	297.7	328.9
50	238.2	272.3	308.7	347.4	388.4	431.7	477.3

TABLE 3(b) (CONTINUED)

CONFIG	Z=15	Z=16	Z=17	Z=18	Z=19	Z=20	Z=21
51	163.2	186.4	211.1	237.3	265.1	294.5	325.4
52	237.8	271.9	308.3	347.0	387.9	431.2	476.7
53	163.3	186.5	211.2	237.5	265.3	294.6	325.5
54	237.7	271.8	308.1	346.8	387.7	431.0	476.5
55	163.2	186.4	211.1	237.4	265.1	294.5	325.4
56	237.6	271.7	308.1	346.7	387.7	430.9	476.5
57	163.2	186.3	211.1	237.3	265.1	294.4	325.3
58	237.2	271.2	307.4	345.9	386.7	429.8	475.2
59*	162.4	185.5	210.1	236.1	263.7	292.8	323.5
60	236.9	270.9	307.1	345.6	386.3	429.4	474.7
61	162.3	185.5	209.9	236.0	263.7	292.8	323.4
62	236.8	270.7	306.9	345.4	386.1	429.2	474.5
63	162.3	185.3	209.9	236.0	263.6	292.7	323.3
64	236.7	270.4	306.4	345.1	385.4	428.5	473.9
65*	162.0	185.1	209.7	235.5	262.6	291.6	322.6

TABLE 3(b) (CONTINUED)

CONFIG	Z=22	Z=23	Z=24	Z=25	Z=26	Z=27	Z=28
1	574.0	628.8	686.1	745.9	808.2	873.1	940.4
2	567.9	622.4	679.4	738.9	800.9	865.4	932.4
3	542.2	594.0	648.1	704.6	763.4	824.6	888.2
4	540.7	592.4	646.4	702.8	761.6	822.7	886.2
5	540.0	591.6	645.7	702.1	760.8	821.9	885.4
6	532.1	582.8	635.9	691.3	749.0	809.0	871.3
7	531.2	581.9	634.9	690.3	747.9	807.9	870.2
8	530.8	581.5	634.5	689.8	747.4	807.3	869.6
9	530.7	581.4	634.4	689.7	747.3	807.2	869.5
10	527.3	577.6	630.2	685.1	742.2	801.7	863.4
11	526.8	577.0	629.6	684.4	741.5	801.0	862.6
12	526.3	576.7	629.3	684.1	741.2	800.6	862.3
13	526.3	576.7	629.2	684.0	741.1	800.5	862.2
14	525.0	575.1	627.4	681.9	738.8	798.0	859.3
15	524.4	574.5	626.7	681.4	738.1	797.2	858.7
16	524.2	574.2	626.5	681.0	737.9	797.0	858.3
17	523.6	573.5	624.8	681.0	735.7	795.8	856.9
18	400.3	438.6	478.7	520.5	564.0	609.3	656.4
19	364.8	400.0	436.7	475.1	515.0	556.6	599.8
20	361.8	396.7	433.3	471.5	511.4	552.8	595.8
21	358.7	393.6	430.0	468.1	507.8	549.1	591.9
22	351.8	385.8	421.3	458.4	497.1	537.3	579.1
23	349.7	383.6	419.1	456.1	494.6	534.8	576.4
24	346.6	380.4	415.7	452.6	491.0	531.0	572.5
25	344.3	377.6	412.8	449.6	487.9	527.7	569.2

TABLE 3(b) (CONTINUED)

CONFIG	Z=22	Z=23	Z=24	Z=25	Z=26	Z=27	Z=28
26	345.9	379.3	414.2	450.7	488.8	528.4	569.5
27	343.7	377.0	411.9	448.3	486.3	525.8	566.9
28	341.1	374.4	409.2	445.5	483.3	522.7	563.7
29	339.4	372.5	407.2	443.4	481.2	520.5	561.3
30	341.8	374.8	409.4	445.6	483.3	522.4	563.3
31	340.1	373.2	407.7	443.8	481.4	520.7	561.3
32	338.5	371.4	405.9	441.9	479.5	518.5	559.1
33	339.4	372.5	406.6	442.3	481.4	518.8	560.0
34	564.2	618.5	675.3	734.6	796.4	860.6	927.4
35	399.2	437.4	477.4	519.1	562.6	607.9	654.8
36	539.6	591.2	645.2	701.5	760.2	821.3	884.7
37*	371.9	407.3	444.3	483.0	523.2	565.1	608.5
38	538.1	589.6	643.5	699.8	758.4	819.4	882.7
39	371.4	406.7	443.7	482.3	522.6	564.4	607.8
40	537.5	589.0	642.9	699.2	757.8	818.7	882.1
41	370.9	406.2	443.2	481.8	522.0	563.8	607.2
42	529.7	580.4	633.3	688.5	746.1	806.0	868.1
43*	362.3	396.8	432.7	470.3	509.4	550.0	592.3
44	528.9	579.5	632.3	687.5	745.1	804.9	867.9
45	362.1	396.5	432.5	470.0	509.1	549.8	592.0
46	528.5	579.1	631.9	687.1	744.6	804.4	866.5
47	361.9	396.3	432.3	469.8	508.9	549.5	591.7
48	528.4	578.9	631.8	687.0	744.5	804.3	866.4
49	361.8	396.2	432.1	469.6	508.7	549.3	591.5
50	525.1	575.3	627.7	682.5	739.5	798.8	860.4

TABLE 3(b) (CONCLUDED)

CONFIG	Z=22	Z=23	Z=24	Z=25	Z=26	Z=27	Z=28
51	357.8	391.7	427.2	464.2	502.8	542.9	584.6
52	524.6	574.7	627.1	681.8	738.8	798.1	859.7
53	357.9	391.8	427.3	464.4	503.0	543.1	584.8
54	524.3	574.4	626.8	681.5	738.5	797.8	859.3
55	357.8	391.7	427.2	464.2	502.8	542.9	584.6
56	524.3	574.4	626.8	681.5	738.4	797.7	859.3
57	357.7	391.7	427.1	464.2	502.7	542.9	584.5
58	522.8	572.7	624.9	679.3	736.1	795.1	856.4
59*	355.8	389.4	424.6	461.3	499.8	539.7	581.1
60	522.3	572.2	624.3	678.8	735.5	794.5	855.7
61	355.6	389.4	424.6	461.4	499.6	539.5	580.8
62	522.1	571.9	624.1	678.5	735.2	794.2	855.4
63	355.5	389.2	424.5	461.3	499.6	539.4	580.7
64	521.3	571.1	623.0	677.5	733.7	792.7	853.9
65*	353.9	387.6	421.4	460.2	498.4	537.4	578.1

TABLE 4(a)–CONFIGURATION LIST FOR 5 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S 2S 2P 3S 3P 3F 4S 4P 4D 4F 5S 5P 5D 5F 6S 6P 6D 7S
GROUND CONFIGURATION		
1	ODD	2 2 1
ONE-ELECTRON EXCITED CONFIGURATIONS		
2		2 2 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3	ODD	2 2 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4		2 2 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5		2 2 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
6	ODD	2 2 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
7		2 2 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
8	ODD	2 2 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
9		2 2 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
10	ODD	2 2 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
11		2 2 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
12	ODD	2 2 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
13		2 2 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
14	ODD	2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
15		2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
16		2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
17		2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
18	ODD	2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
19		2 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
20	ODD	2 1 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
21	ODD	2 1 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
22		2 1 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
23	ODD	2 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
24		2 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
25	ODD	2 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
26		2 1 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
27	ODD	2 1 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
28		2 1 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
29	ODD	2 1 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
30		2 1 1 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
31	ODD	2 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
32	ODD	2 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
33		2 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
34	ODD	2 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
TWO-ELECTRON EXCITED CONFIGURATIONS		
35	ODD	2 0 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
36		2 1 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
37		2 0 2 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
38	ODD	2 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
39		2 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
40		2 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
41		2 0 2 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
42	ODD	2 0 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
43		2 1 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
44		2 0 2 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
45	ODD	2 0 1 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
46	ODD	2 1 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
47	ODD	2 0 2 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0

TABLE 4(a) (CONCLUDED)

45		2	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
46		2	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
47		2	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
48		2	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
49		2	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
50		2	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
51		2	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
52		2	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
53		2	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
54		2	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
55		2	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
56		2	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
57		2	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
58		2	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
59		2	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
60		2	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
61		2	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
62		2	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
63		2	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
64		2	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
65		2	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
66		2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
67		2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
68		2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
69		2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
70		2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
71		2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
72		2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
73		2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
74		2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
75		2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
76		2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
77		2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
78		2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1

TABLE 4(b)–5 ELECTRONS

CONFIG	Z=10	Z=11	Z=12	Z=13	Z=14	Z=15	Z=16
1	115.7	142.2	171.4	203.4	238.2	275.7	315.9
2	113.0	138.6	166.8	197.5	230.9	267.0	305.6
3	112.5	138.0	166.2	196.9	230.2	266.1	304.6
4	112.2	137.7	165.8	196.4	229.8	265.7	304.2
5	111.5	136.7	164.4	194.7	227.6	263.0	301.0
6	111.4	136.5	164.2	194.5	227.3	262.7	300.6
7	111.2	136.3	164.0	194.2	227.0	262.4	300.3
8	111.1	136.2	163.9	194.1	226.9	262.3	300.2
9	111.0	135.9	163.5	193.5	226.1	261.3	299.0
10	110.8	135.8	163.3	193.4	226.0	261.1	298.7
11	110.8	135.7	163.2	193.3	225.8	260.9	298.6
12	110.7	135.7	163.2	193.2	225.8	260.9	298.5
13	110.6	135.5	162.9	192.9	225.3	260.3	297.9
14	110.6	135.4	162.9	192.8	225.3	260.2	297.8
15	110.5	135.4	162.8	192.7	225.2	260.2	297.7
16	110.5	135.3	162.6	192.5	224.9	259.8	297.3
17	114.5	140.8	169.8	201.6	236.1	273.4	313.5
18	111.5	136.9	164.8	195.4	228.5	264.3	302.7
19	110.8	136.1	163.9	194.4	227.5	263.2	301.5
20	110.5	135.7	163.5	193.9	227.0	262.6	300.9
21	110.1	135.1	162.6	192.6	225.2	260.4	298.2
22	109.7	134.6	162.0	192.0	224.6	259.7	297.4
23	109.5	134.4	161.8	191.8	224.3	259.4	297.1
24	109.5	134.3	161.7	191.7	224.2	259.3	297.0
25	109.4	134.2	161.5	191.3	223.6	258.5	296.0

TABLE 4(b) (CONTINUED)

CONFIG	Z=10	Z=11	Z=12	Z=13	Z=14	Z=15	Z=16
26	109.1	133.8	161.1	190.9	223.2	258.1	295.5
27	109.1	133.8	161.0	190.8	223.1	257.9	295.3
28	109.0	133.7	160.9	190.7	223.0	257.9	295.2
29	109.2	134.0	160.9	190.8	222.9	257.7	294.9
30	109.0	133.5	160.7	190.4	222.6	257.3	294.5
31	108.8	133.4	160.5	190.2	222.4	257.1	294.3
32	108.7	133.6	161.5	189.1	223.9	255.9	295.0
33	113.1	139.2	168.0	199.5	233.8	270.9	310.7
34	108.3	132.7	159.5	188.8	220.6	254.8	291.6
35	110.5	135.6	163.4	193.7	226.7	262.3	300.5
36	106.9	131.0	157.7	186.8	218.3	252.4	288.9
37	107.4	131.6	158.3	187.5	219.1	253.2	289.8
38	109.8	134.9	162.5	192.8	225.7	261.2	299.3
39	106.6	130.7	157.3	186.3	217.8	251.8	288.2
40	107.0	131.2	157.9	187.0	218.6	252.7	289.2
41	109.5	134.5	162.2	192.4	225.2	260.7	298.8
42	106.3	130.4	156.9	185.9	217.4	251.3	287.7
43*	106.4	130.3	156.6	185.3	216.5	250.0	286.0
44	109.2	133.9	161.2	191.1	223.5	258.5	296.1
45	105.7	129.4	155.6	184.2	215.2	248.7	284.5
46	106.0	129.9	156.1	184.8	215.9	249.5	285.4
47	108.7	133.4	160.7	190.5	222.9	257.9	295.4
48	105.4	129.1	155.2	183.7	214.7	248.1	283.9
49	105.9	129.7	155.9	184.6	215.7	249.2	285.1
50	108.6	133.3	160.5	190.3	222.6	257.6	295.0

TABLE 4(b) (CONTINUED)

CONFIG	Z=10	Z=11	Z=12	Z=13	Z=14	Z=15	Z=16
51	105.2	128.9	155.0	183.5	214.5	247.9	283.7
52	105.8	129.6	155.8	184.5	215.6	249.1	285.0
53	108.5	133.2	160.4	190.2	222.6	257.5	294.9
54	105.2	128.8	154.9	183.4	214.4	247.7	283.5
55	105.6	129.3	155.4	183.9	214.8	248.1	283.8
56	108.5	133.0	160.2	189.8	222.0	256.7	294.0
57	105.0	128.6	154.5	182.9	213.7	246.8	282.4
58	105.4	129.1	155.2	183.6	214.5	247.8	283.4
59	108.2	132.7	159.8	189.4	221.6	256.3	293.5
60	104.8	128.3	154.3	182.6	213.4	246.5	282.0
61	105.4	129.0	155.1	183.5	214.4	247.6	283.3
62	108.1	132.7	159.7	189.3	221.4	256.1	293.3
63	104.8	128.3	154.2	182.5	213.2	246.4	281.9
64	105.3	129.0	155.0	183.5	214.3	247.6	283.2
65	108.1	132.6	159.7	189.3	221.4	256.1	293.3
66	104.7	128.2	154.1	182.5	213.2	246.3	281.8
67*	105.4	129.1	155.2	183.3	214.2	247.1	283.2
68	108.3	132.7	159.7	189.3	221.3	256.0	293.1
69	104.6	128.1	154.3	182.3	213.2	245.8	281.7
70	105.2	128.8	154.7	183.1	213.8	247.0	282.6
71	108.0	132.4	159.4	188.9	221.0	255.5	292.6
72	104.5	128.0	153.9	182.0	212.8	245.8	281.1
73	105.1	128.7	154.6	183.0	213.7	246.8	282.3
74	107.9	132.3	159.3	188.8	220.8	255.3	292.4
75	104.5	127.9	153.8	181.9	212.5	245.6	280.9

TABLE 4(b) (CONTINUED)

CONFIG	Z=10	Z=11	Z=12	Z=13	Z=14	Z=15	Z=16
76*	104.3	128.6	154.1	181.4	213.6	247.7	281.8
77	108.1	132.6	159.2	188.7	221.3	255.3	292.6
78	104.3	128.6	154.0	180.7	214.2	245.3	281.7

TABLE 4(b) (CONTINUED)

CONFIG	Z=17	Z=18	Z=19	Z=20	Z=21	Z=22	Z=23
1	358.9	404.6	453.1	504.3	558.3	615.1	674.5
2	346.8	390.7	437.1	486.2	537.8	592.1	649.0
3	345.8	389.5	435.9	484.8	536.4	590.6	647.4
4	345.3	389.1	435.5	484.4	536.0	590.2	647.0
5	341.8	384.6	430.3	478.5	529.3	582.6	638.5
6	341.1	384.2	429.9	478.1	528.8	582.1	638.0
7	340.8	383.9	429.5	477.7	528.4	581.7	637.6
8	340.6	383.7	429.3	477.4	528.2	581.4	637.3
9	339.2	381.9	427.3	475.1	525.5	578.4	633.9
10	339.0	381.7	427.0	474.8	525.2	578.1	633.6
11	338.8	381.5	426.8	474.6	525.0	577.9	633.3
12	338.7	381.5	426.7	474.5	524.9	577.8	633.2
13	337.9	380.5	425.6	473.3	523.4	576.1	631.3
14	337.8	380.4	425.5	473.1	523.3	576.0	631.2
15	337.7	380.3	425.4	473.0	523.2	575.9	631.1
16	337.2	379.7	424.7	472.2	522.2	574.8	629.9
17	356.3	401.8	450.1	501.1	554.9	611.4	670.7
18	343.7	387.3	433.5	482.4	533.8	587.8	644.5
19	342.4	385.9	432.1	480.8	532.1	586.1	642.6
20	341.7	385.2	431.3	480.0	531.3	585.2	641.7
21	338.5	381.3	426.8	474.8	525.3	578.4	634.1
22	337.7	380.5	425.8	473.8	524.3	577.4	633.0
23	337.3	380.1	425.4	473.3	523.8	576.8	632.4
24	337.2	379.9	425.3	473.2	523.6	576.7	632.3
25	336.0	378.5	423.5	471.1	521.3	574.0	629.2

TABLE 4(b) (CONTINUED)

CONFIG	Z=17	Z=18	Z=19	Z=20	Z=21	Z=22	Z=23
26	335.4	377.9	423.0	470.5	520.6	573.3	628.5
27	335.2	377.7	422.7	470.3	520.3	573.0	628.1
28	335.3	377.6	422.6	470.2	520.3	572.9	628.0
29	334.8	377.3	422.0	469.5	519.5	571.8	626.8
30	334.4	376.7	421.4	469.0	518.7	571.2	626.2
31	334.1	376.4	421.2	468.6	518.5	570.9	625.8
32	333.7	375.6	421.9	467.9	517.2	570.8	625.6
33	353.3	398.6	446.6	497.4	551.0	607.3	666.3
34	330.8	372.4	416.6	463.2	512.3	563.8	617.8
35	341.3	384.7	430.8	479.4	530.7	584.5	641.0
36	327.9	369.3	413.2	459.6	508.5	559.9	613.7
37	328.9	370.4	414.4	460.9	509.8	561.2	615.1
38	340.1	383.4	429.3	477.9	529.0	582.8	639.2
39	327.2	368.5	412.4	458.7	507.5	558.8	612.5
40	328.2	369.7	413.7	460.1	509.0	560.4	614.2
41	339.5	382.7	428.7	477.2	528.3	582.0	638.4
42	326.6	367.9	411.8	458.1	506.8	558.1	611.8
43*	324.5	365.3	408.6	454.2	502.4	552.9	605.9
44	336.2	378.9	424.2	472.0	522.4	575.3	630.8
45	322.8	363.5	406.7	452.2	500.2	550.6	603.5
46	323.8	364.6	407.8	453.5	501.6	552.1	605.0
47	335.4	378.1	423.3	471.0	521.4	574.2	629.7
48	322.2	362.9	406.0	451.5	499.4	549.8	602.6
49	323.5	364.2	407.4	453.1	501.1	551.6	604.5
50	335.1	377.7	422.9	470.6	520.9	573.8	629.2

TABLE 4(b) (CONTINUED)

CONFIG	Z=17	Z=18	Z=19	Z=20	Z=21	Z=22	Z=23
51	321.9	362.5	405.6	451.1	499.0	549.4	602.1
52	323.3	364.1	407.3	452.9	500.9	551.4	604.3
53	335.0	377.6	422.7	470.5	520.7	573.6	629.0
54	321.7	362.4	405.4	450.9	498.8	549.2	601.9
55	321.9	362.4	405.3	450.6	498.3	548.4	600.9
56	333.8	376.2	421.0	468.5	518.4	570.9	626.0
57	320.4	360.7	403.5	448.7	496.2	546.2	598.6
58	321.5	362.0	404.9	450.2	497.8	547.9	600.4
59	333.3	375.6	420.5	467.9	517.8	570.3	625.3
60	320.0	360.3	403.1	448.2	495.7	545.7	598.0
61	321.3	361.8	404.6	449.9	497.6	547.6	600.1
62	333.1	375.4	420.2	467.6	517.5	570.0	625.0
63	319.8	360.1	402.9	448.0	495.5	545.5	597.8
64	321.3	361.7	404.6	449.8	497.5	547.5	600.0
65	333.0	375.3	420.1	467.5	517.4	569.9	624.9
66	319.7	360.1	402.8	447.9	495.4	545.4	597.7
67*	320.6	361.0	403.7	449.1	496.5	545.7	598.4
68	332.7	374.8	419.6	466.8	516.6	568.8	623.7
69	318.9	359.0	402.0	447.2	494.4	544.4	595.9
70	320.5	360.4	403.2	448.6	495.8	545.9	597.9
71	332.2	374.4	419.0	466.2	516.0	568.2	623.0
72	318.9	358.9	401.5	446.7	493.9	543.5	595.8
73	320.2	360.4	403.3	448.2	495.6	545.5	597.6
74	332.0	374.1	418.8	466.0	515.7	567.9	622.7
75	318.7	358.9	401.5	446.3	493.7	543.3	595.5

TABLE 4(b) (CONTINUED)

CONFIG	Z=17	Z=18	Z=19	Z=20	Z=21	Z=22	Z=23
76*	321.5	359.9	401.5	449.9	492.1	544.3	599.7
77	332.0	374.0	418.9	465.6	515.3	567.3	621.9
78	316.2	358.5	403.0	449.0	490.1	543.9	597.9

TABLE 4(b) (CONTINUED)

CONFIG	Z=24	Z=25	Z=26	Z=27	Z=28	Z=29	Z=30
1	736.8	801.8	869.5	940.0	1013.2	1089.2	1168.0
2	708.5	770.7	835.4	902.7	972.7	1045.2	1120.4
3	706.8	768.8	833.4	900.6	970.5	1042.9	1118.0
4	706.3	768.3	832.9	900.1	969.9	1042.4	1117.4
5	697.0	758.1	821.7	887.8	956.6	1027.8	1101.7
6	696.5	757.5	821.1	887.2	955.9	1027.2	1101.0
7	696.0	757.0	820.5	886.7	955.3	1026.6	1100.4
8	695.7	756.7	820.2	886.3	955.0	1026.2	1100.0
9	691.9	752.4	815.5	881.1	949.3	1020.0	1093.2
10	691.5	752.1	815.1	880.8	948.9	1019.6	1092.8
11	691.3	751.8	814.9	880.5	948.6	1019.3	1092.5
12	691.2	751.7	814.7	880.3	948.5	1019.1	1092.3
13	689.1	749.4	812.2	877.5	945.4	1015.8	1088.7
14	688.9	749.2	812.0	877.3	945.2	1015.5	1088.5
15	688.8	749.1	811.9	877.2	945.0	1015.4	1088.3
16	687.5	747.6	810.2	875.4	943.1	1013.3	1086.0
17	732.8	797.5	865.1	935.4	1008.4	1084.2	1162.7
18	703.8	765.7	830.2	897.3	967.0	1039.3	1114.2
19	701.8	763.6	828.0	895.0	964.6	1036.8	1111.6
20	700.9	762.6	827.0	894.0	963.5	1035.7	1110.6
21	692.4	753.2	816.5	882.5	951.0	1022.0	1095.6
22	691.2	751.9	815.2	881.1	949.6	1020.6	1094.1
23	690.6	751.3	814.6	880.4	948.9	1019.8	1093.4
24	690.4	751.1	814.4	880.2	948.6	1019.6	1093.1
25	687.0	747.3	810.1	875.5	943.4	1013.9	1086.9

TABLE 4(b) (CONTINUED)

CONFIG	Z=24	Z=25	Z=26	Z=27	Z=28	Z=29	Z=30
26	686.2	746.5	809.3	874.6	942.5	1013.0	1085.9
27	685.8	746.1	808.9	874.2	942.1	1012.5	1085.4
28	685.7	746.0	808.8	874.1	942.0	1012.4	1085.3
29	684.3	744.3	807.0	872.0	939.7	1009.8	1082.5
30	683.6	743.6	806.2	871.2	938.9	1009.0	1081.6
31	683.3	743.3	805.8	870.9	938.4	1008.5	1081.2
32	682.9	741.4	804.8	869.1	937.1	1007.1	1079.1
33	728.1	792.7	860.0	930.0	1002.9	1078.4	1156.7
34	674.3	733.3	794.7	858.6	925.0	993.8	1065.2
35	700.1	761.8	826.1	893.0	962.5	1034.6	1109.4
36	670.0	728.7	790.0	853.6	919.8	988.4	1059.5
37	671.5	730.3	791.6	855.3	921.5	990.3	1061.4
38	698.1	759.7	823.9	890.7	960.2	1032.2	1106.9
39	668.7	727.4	788.5	852.1	918.2	986.8	1057.8
40	670.6	729.4	790.6	854.4	920.6	989.2	1060.4
41	697.3	758.9	823.1	889.9	959.3	1031.3	1105.9
42	668.0	726.6	787.7	851.3	917.4	985.9	1056.9
43*	661.3	719.1	779.3	842.0	907.0	974.5	1044.5
44	688.9	749.5	812.7	878.5	946.8	1017.7	1091.1
45	658.7	716.4	776.5	839.0	903.9	971.3	1041.1
46	660.3	718.1	778.3	840.9	905.9	973.4	1043.3
47	687.7	748.3	811.4	877.1	945.4	1016.2	1089.6
48	657.8	715.4	775.5	837.9	902.8	970.1	1039.9
49	659.8	717.6	777.7	840.3	905.3	972.7	1042.6
50	687.2	747.7	810.8	876.5	944.7	1015.5	1088.9

TABLE 4(b) (CONTINUED)

CONFIG	Z=24	Z=25	Z=26	Z=27	Z=28	Z=29	Z=30
51	657.3	714.9	775.0	837.4	902.3	969.6	1039.3
52	659.6	717.3	777.5	840.1	905.1	972.5	1042.3
53	687.0	747.5	810.6	876.3	944.5	1015.3	1088.6
54	657.1	714.7	774.7	837.2	902.0	969.3	1039.0
55	655.8	713.1	772.8	834.9	899.4	966.3	1035.6
56	683.6	743.7	806.4	871.6	939.3	1009.6	1082.5
57	653.3	710.5	770.1	832.1	896.4	963.2	1032.4
58	655.3	712.5	772.2	834.3	898.7	965.6	1034.9
59	682.8	742.9	805.6	870.7	938.5	1008.7	1081.5
60	652.8	709.9	769.5	831.4	895.7	962.5	1031.7
61	655.0	712.2	771.9	833.9	898.4	965.3	1034.5
62	682.5	742.6	805.2	870.3	938.0	1008.3	1081.0
63	652.5	709.7	769.2	831.1	895.4	962.2	1031.3
64	654.8	712.1	771.8	833.8	898.3	965.1	1034.4
65	682.4	742.5	805.1	870.2	937.9	1008.1	1080.9
66	652.4	709.5	769.1	831.0	895.3	962.0	1031.2
67*	652.8	710.4	769.6	831.0	895.4	962.1	1030.9
68	681.0	740.9	803.2	868.1	935.6	1005.6	1078.1
69	650.7	707.5	766.5	828.8	892.7	958.5	1028.1
70	652.6	709.5	769.3	830.8	894.9	961.6	1030.4
71	680.3	740.1	802.5	867.4	934.8	1004.7	1077.2
72	650.2	707.3	766.3	828.6	892.1	958.6	1027.4
73	652.3	709.4	768.7	830.5	894.7	961.3	1030.1
74	680.0	739.8	802.1	867.0	934.4	1004.3	1076.8
75	649.9	706.9	766.0	827.7	891.8	958.2	1027.0

TABLE 4(b) (CONCLUDED)

CONFIG	Z=24	Z=25	Z=26	Z=27	Z=28	Z=29	Z=30
76*	649.2	710.7	769.9	834.4	894.1	962.7	1028.1
77	679.7	738.6	801.5	865.5	933.2	1002.8	1075.5
78	641.4	706.4	768.6	827.1	891.3	956.1	1024.7

TABLE 5(a)–CONFIGURATION LIST FOR 6 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S 2S 2P 3S 3P 3D 4S 4P 4D 4F 5S 5P 5D 5F 6S 6P 6D 7S
GROUND CONFIGURATION		
1		2 2 2
ONE-ELECTRON EXCITED CONFIGURATIONS		
2	ODD	2 2 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3		2 2 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4	EVEN	2 2 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5	ODD	2 2 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
6	EVEN	2 2 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
7	ODD	2 2 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
8	EVEN	2 2 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
9	ODD	2 2 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
10	EVEN	2 2 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
11	ODD	2 2 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
12	EVEN	2 2 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
13	ODD	2 2 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
14	EVEN	2 2 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
15	ODD	2 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
16	EVEN	2 2 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
17	ODD	2 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
18	EVEN	2 2 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
19	ODD	2 1 2 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
20	EVEN	2 1 2 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
21		2 1 2 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
22	ODD	2 1 2 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
23		2 1 2 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
24	ODD	2 1 2 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
25		2 1 2 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
26	ODD	2 1 2 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
27		2 1 2 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
28	ODD	2 1 2 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
29		2 1 2 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
30	ODD	2 1 2 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
31		2 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
32	ODD	2 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
33		2 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
34	EVEN	2 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
TWO-ELECTRON EXCITED CONFIGURATIONS		
35		2 2 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
36	EVEN	2 2 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
37		2 2 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
38	EVEN	2 2 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
39	ODD	2 2 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
40	EVEN	2 2 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
41	ODD	2 2 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
42	EVEN	2 2 0 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
43	ODD	2 2 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
44	EVEN	2 2 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
45	ODD	2 2 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
46	EVEN	2 2 0 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
47		2 2 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0

TABLE 5(a) (CONCLUDED)

49	ODD	2	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51		2	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53		2	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
55	ODD	2	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
57		2	0	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
59	ODD	2	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
61		2	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
63	ODD	2	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
65	ODD	2	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
67		2	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
69	ODD	2	0	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
71	ODD	2	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
73		2	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
75	ODD	2	0	2	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
77	ODD	2	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
79		2	1	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
81	ODD	2	0	2	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
83	ODD	2	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
85		2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
87	ODD	2	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
89	ODD	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
91	ODD	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
93	ODD	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

TABLE 5(b)–6 ELECTRONS

CONFIG	Z=12	Z=13	Z=14	Z=15	Z=16	Z=17	Z=18
1	179.5	213.6	250.7	290.9	334.0	380.1	429.2
2	175.0	208.0	243.8	282.5	324.0	368.4	415.6
3	174.0	206.9	242.6	281.2	322.6	367.0	414.1
4	173.6	206.4	242.0	280.5	321.9	366.1	413.2
5	173.0	205.5	240.8	278.9	319.8	363.6	410.1
6	172.4	204.8	240.1	278.1	319.0	362.7	409.1
7	172.2	204.6	239.8	277.8	318.6	362.2	408.7
8	172.1	204.5	239.7	277.7	318.5	362.1	408.5
9	172.0	204.3	239.3	277.2	317.8	361.2	407.4
10	171.6	203.9	238.9	276.7	317.3	360.7	406.8
11	171.5	203.7	238.7	276.5	317.1	360.4	406.6
12	171.5	203.7	238.7	276.4	317.0	360.3	406.5
13	171.9	203.8	238.8	276.3	317.1	360.2	406.2
14	171.4	203.3	238.3	275.9	316.6	359.6	405.7
15	171.2	203.3	238.2	275.8	316.3	359.4	405.5
16	170.3	206.0	236.9	277.7	314.4	362.1	404.2
17	177.7	211.6	248.5	288.4	331.3	377.2	426.1
18	173.6	206.3	242.0	280.4	321.8	366.0	413.1
19	172.6	205.3	240.8	279.2	320.5	364.6	411.6
20	172.2	204.8	240.2	278.6	319.8	363.8	410.7
21	171.6	203.9	239.1	277.0	317.7	361.3	407.6
22	171.1	203.3	238.4	276.2	316.9	360.4	406.7
23	170.8	203.0	238.1	275.9	316.5	360.0	406.2
24	170.8	203.0	238.0	275.8	316.4	359.8	406.1
25	170.7	202.8	237.6	275.3	315.7	359.0	405.0

TABLE 5(b) (CONTINUED)

CONFIG	Z=12	Z=13	Z=14	Z=15	Z=16	Z=17	Z=18
26	170.3	202.4	237.2	274.8	315.2	358.4	404.4
27	170.2	202.2	237.0	274.6	315.0	358.2	404.2
28	170.2	202.2	237.0	274.6	315.0	358.1	404.1
29	170.4	202.2	237.2	274.6	315.1	358.0	403.8
30	170.1	201.9	236.7	274.1	314.5	357.4	403.3
31	169.9	201.8	236.5	273.9	314.2	357.2	403.1
32	169.6	203.9	235.6	275.4	313.2	357.7	402.3
33	170.9	202.7	237.2	274.5	314.5	357.2	402.6
34	170.4	202.2	236.6	273.8	313.7	356.4	401.7
35	169.9	201.6	236.1	273.3	313.1	355.8	401.1
36	168.8	200.1	234.1	270.8	310.2	352.2	396.9
37	168.5	199.8	233.7	270.4	309.7	351.7	396.3
38	168.1	199.4	233.3	269.9	309.2	351.2	395.8
39	167.9	199.1	233.0	269.6	308.9	350.8	395.4
40	167.9	199.0	232.7	269.1	308.2	349.9	394.3
41	167.6	198.6	232.4	268.7	307.8	349.5	393.8
42	167.3	198.4	232.1	268.5	307.5	349.1	393.5
43	167.2	198.3	232.0	268.3	307.3	348.9	393.2
44	167.3	198.6	231.7	268.4	306.6	348.7	393.2
45	167.1	198.2	231.6	267.9	306.6	348.6	392.5
46	167.0	197.9	231.5	267.8	306.6	348.2	392.3
47	168.8	196.6	233.1	264.4	309.3	346.7	395.6
48	175.6	209.3	245.9	285.6	328.2	373.8	422.5
49	169.1	200.7	235.0	272.1	311.8	354.3	399.6
50	171.9	204.4	239.8	278.1	319.2	363.2	410.1

TABLE 5(b) (CONTINUED)

CONFIG	Z=12	Z=13	Z=14	Z=15	Z=16	Z=17	Z=18
51	167.0	198.4	232.5	269.3	308.9	351.1	396.1
52	167.9	199.4	233.6	270.5	310.1	352.5	397.6
53	171.0	203.4	238.7	276.9	317.9	361.8	408.6
54	166.6	197.9	231.9	268.6	308.1	350.3	395.2
55	167.4	198.8	233.0	269.8	309.4	351.7	396.7
56	170.5	202.9	238.2	276.3	317.3	361.1	407.8
57	166.2	197.4	231.4	268.0	307.4	349.6	394.4
58*	166.7	197.8	231.5	267.9	307.0	348.8	393.2
59	170.0	202.1	237.0	274.7	315.3	358.6	404.8
60	165.4	196.3	229.8	266.1	305.0	346.6	390.8
61	166.1	197.2	230.8	267.2	306.3	348.0	392.4
62	169.5	201.5	236.3	274.0	314.4	357.7	403.8
63	164.9	195.7	229.2	265.4	304.3	345.8	390.0
64	165.9	196.9	230.6	266.9	305.9	347.6	392.0
65	169.2	201.2	236.0	273.7	314.1	357.3	403.4
66	164.7	195.5	229.0	265.1	304.0	345.5	389.7
67	165.8	196.8	230.4	266.8	305.8	347.4	391.8
68	169.2	201.1	235.9	273.5	314.0	357.2	403.2
69	164.6	195.4	228.8	265.0	303.8	345.3	389.5
70	165.6	196.5	230.0	266.2	305.0	346.4	390.5
71	169.1	201.0	235.6	273.1	313.3	356.4	402.2
72	164.4	195.1	228.4	264.4	303.0	344.3	388.3
73	165.4	196.2	229.7	265.8	304.5	346.0	390.0
74	168.7	200.6	235.2	272.6	312.8	355.8	401.6
75	164.1	194.9	228.1	264.0	302.6	343.9	387.8

TABLE 5(b) (CONTINUED)

CONFIG	Z=12	Z=13	Z=14	Z=15	Z=16	Z=17	Z=18
76	165.2	196.0	229.5	265.6	304.4	345.8	389.8
77	168.6	200.4	235.0	272.4	312.6	355.6	401.4
78	164.0	194.6	227.9	263.9	302.4	343.7	387.6
79	165.2	196.0	229.4	265.5	304.3	345.7	389.7
80	168.6	200.4	235.0	272.4	312.5	355.5	401.3
81	164.0	194.6	227.9	263.8	302.4	343.6	387.5
82*	165.4	196.2	229.4	265.6	303.8	345.6	389.2
83	168.8	200.5	235.2	272.4	312.5	355.4	401.1
84	164.0	194.7	227.5	263.8	302.1	343.5	387.3
85	165.0	195.8	229.0	265.0	303.6	345.0	388.9
86	168.4	200.1	234.7	272.0	312.0	354.9	400.5
87	163.7	194.5	227.6	263.4	301.7	343.2	386.6
88	164.9	195.6	228.9	265.0	303.5	344.8	388.7
89	168.3	200.0	234.5	271.8	311.8	354.6	400.3
90	163.7	194.2	227.4	263.2	301.6	342.8	386.4
91*	164.5	197.2	230.4	262.7	306.9	343.1	391.5
92	168.8	200.7	234.3	272.4	311.4	355.1	399.9
93	162.4	194.1	228.0	259.3	303.4	342.1	386.1

TABLE 5(b) (CONTINUED)

CONFIG	Z=19	Z=20	Z=21	Z=22	Z=23	Z=24	Z=25
1	481.4	536.5	594.6	655.7	719.9	787.0	857.1
2	465.8	518.7	574.6	633.3	694.9	759.3	826.6
3	464.1	517.0	572.7	631.3	692.7	757.1	824.2
4	463.2	516.0	571.7	630.2	691.6	755.9	823.0
5	459.5	511.6	566.6	624.4	685.0	748.4	814.7
6	458.4	510.5	565.5	623.2	683.7	747.1	813.3
7	457.9	510.0	564.9	622.6	683.1	746.4	812.5
8	457.8	509.8	564.7	622.4	682.9	746.2	812.3
9	456.4	508.2	562.8	620.2	680.3	743.3	809.0
10	455.8	507.6	562.1	619.4	679.6	742.5	808.2
11	455.5	507.2	561.8	619.1	679.2	742.1	807.7
12	455.4	507.1	561.7	619.0	679.0	741.9	807.6
13	455.2	506.6	561.0	618.3	677.9	740.9	806.5
14	454.6	505.9	560.4	617.5	677.5	740.2	805.5
15	454.2	505.7	560.1	617.1	677.0	739.7	805.1
16	455.1	503.6	563.0	616.0	677.1	740.2	803.6
17	478.0	532.9	590.8	651.7	715.6	782.5	852.4
18	463.0	515.8	571.4	629.9	691.3	755.6	822.6
19	461.4	514.1	569.6	628.0	689.2	753.4	820.3
20	460.5	513.1	568.6	627.0	688.2	752.3	819.2
21	456.8	508.8	563.6	621.2	681.6	744.9	810.9
22	455.8	507.7	562.5	620.0	680.4	743.6	809.5
23	455.3	507.2	561.9	619.4	679.8	742.9	808.9
24	455.2	507.0	561.7	619.2	679.5	742.7	808.6
25	453.8	505.4	559.8	617.0	677.0	739.8	805.3

TABLE 5(b) (CONTINUED)

CONFIG	Z=19	Z=20	Z=21	Z=22	Z=23	Z=24	Z=25
26	453.2	504.8	559.2	616.3	676.2	739.0	804.5
27	452.9	504.5	558.8	616.0	675.9	738.6	804.1
28	452.8	504.4	558.7	615.8	675.8	738.5	804.0
29	452.6	503.9	558.1	615.1	674.9	737.5	802.7
30	452.0	503.2	557.5	614.4	674.1	736.6	801.8
31	451.6	503.0	557.2	614.1	673.8	736.3	801.5
32	452.2	502.6	557.9	612.5	672.8	734.8	802.1
33	450.8	501.6	555.2	611.5	670.6	732.3	796.8
34	449.8	500.5	554.0	610.2	669.2	730.8	795.2
35	449.2	499.9	553.4	609.6	668.5	730.2	794.5
36	444.3	494.4	547.1	602.5	660.6	721.3	784.7
37	443.7	493.7	546.4	601.7	659.8	720.5	783.9
38	443.1	493.1	545.7	601.0	659.0	719.7	783.1
39	442.7	492.6	545.3	600.6	658.5	719.2	782.5
40	441.3	490.9	543.3	598.2	655.9	716.1	779.0
41	440.8	490.5	542.8	597.7	655.3	715.5	778.4
42	440.4	490.0	542.3	597.2	654.8	715.0	777.9
43	440.2	489.8	542.0	596.9	654.5	714.7	777.6
44	440.0	488.8	540.8	595.6	653.6	713.3	775.9
45	439.0	488.9	540.9	595.6	652.8	712.8	775.3
46	439.0	488.4	540.6	595.2	652.5	712.5	775.1
47	437.8	486.0	542.8	590.8	647.7	716.1	771.8
48	474.1	528.8	586.4	647.0	710.7	777.3	847.0
49	447.5	498.2	551.6	607.7	666.5	728.1	792.3
50	459.8	512.3	567.8	626.1	687.2	751.2	818.1

TABLE 5(b) (CONTINUED)

CONFIG	Z=19	Z=20	Z=21	Z=22	Z=23	Z=24	Z=25
51	443.8	494.2	547.4	603.3	661.9	723.2	787.2
52	445.4	495.9	549.1	605.1	663.7	725.1	789.2
53	458.2	510.6	565.9	624.1	685.2	749.1	815.8
54	442.8	493.1	546.1	601.9	660.4	721.6	785.5
55	444.5	495.0	548.2	604.1	662.7	724.1	788.2
56	457.4	509.8	565.1	623.2	684.2	748.1	814.8
57	442.0	492.3	545.3	601.0	659.5	720.7	784.6
58*	440.3	490.1	542.6	597.7	655.5	716.0	779.2
59	453.7	505.5	560.1	617.5	677.7	740.7	806.6
60	437.8	487.4	539.7	594.6	652.3	712.6	775.6
61	439.4	489.2	541.6	596.7	654.4	714.8	777.9
62	452.7	504.4	558.9	616.3	676.4	739.4	805.2
63	436.9	486.5	538.7	593.6	651.2	711.5	774.4
64	439.0	488.7	541.1	596.1	653.8	714.2	777.3
65	452.3	503.9	558.4	615.7	675.9	738.8	804.5
66	436.5	486.1	538.3	593.1	650.7	710.9	773.8
67	438.8	488.5	540.8	595.9	653.6	714.0	777.0
68	452.1	503.8	558.2	615.5	675.6	738.5	804.3
69	436.3	485.8	538.0	592.9	650.4	710.6	773.5
70	437.3	486.7	538.7	593.4	650.8	710.8	773.5
71	450.8	502.2	556.4	613.4	673.1	735.7	801.0
72	434.8	484.1	536.0	590.5	647.7	707.5	770.0
73	436.8	486.2	538.2	592.9	650.2	710.2	772.8
74	450.2	501.5	555.7	612.6	672.4	734.9	800.2
75	434.3	483.5	535.4	589.9	647.1	706.8	769.3

TABLE 5(b) (CONTINUED)

CONFIG	Z=19	Z=20	Z=21	Z=22	Z=23	Z=24	Z=25
76	436.5	485.9	537.9	592.5	649.9	709.8	772.4
77	449.9	501.2	555.4	612.3	672.0	734.5	799.8
78	434.1	483.3	535.1	589.6	646.7	706.5	769.0
79	436.4	485.8	537.8	592.4	649.7	709.7	772.3
80	449.8	501.1	555.3	612.2	671.9	734.4	799.7
81	434.0	483.2	535.0	589.5	646.6	706.4	768.8
82*	436.0	484.6	537.0	591.6	648.9	708.1	770.6
83	449.5	500.7	554.8	611.4	671.0	733.3	798.4
84	433.5	482.6	534.2	588.6	645.5	704.9	767.3
85	435.2	484.4	536.3	591.2	648.0	707.7	770.1
86	448.9	500.1	554.1	610.8	670.3	732.6	797.6
87	432.9	482.1	533.7	588.0	644.6	704.4	766.8
88	435.2	484.3	536.2	590.6	647.8	707.4	769.8
89	448.6	499.8	553.7	610.4	669.9	732.2	797.3
90	432.8	481.8	533.5	587.7	644.7	704.2	766.4
91*	437.0	482.0	541.4	587.6	647.7	707.5	765.2
92	448.6	499.8	553.1	610.0	669.7	731.7	797.0
93	428.6	479.6	536.3	584.2	647.1	709.7	765.5

TABLE 5(b) (CONTINUED)

CONFIG	Z=26	Z=27	Z=28	Z=29	Z=30	Z=31	Z=32
1	930.3	1006.4	1085.5	1167.6	1252.8	1340.9	1432.0
2	896.7	969.7	1045.6	1124.3	1205.9	1290.3	1377.6
3	894.3	967.1	1042.9	1121.5	1203.0	1287.3	1374.5
4	893.0	965.8	1041.6	1120.1	1201.6	1285.8	1373.0
5	883.7	955.6	1030.2	1107.7	1188.0	1271.1	1357.0
6	882.3	954.0	1028.7	1106.1	1186.3	1269.4	1355.2
7	881.5	953.3	1027.8	1105.2	1185.4	1268.4	1354.2
8	881.2	953.0	1027.5	1104.9	1185.1	1268.1	1353.9
9	877.5	948.8	1022.9	1099.8	1179.5	1262.0	1347.3
10	876.7	947.9	1022.0	1098.9	1178.5	1261.0	1346.2
11	876.2	947.5	1021.5	1098.3	1178.0	1260.4	1345.6
12	876.1	947.3	1021.4	1098.2	1177.8	1260.2	1345.4
13	874.7	945.6	1019.4	1096.0	1175.5	1257.5	1342.3
14	873.6	944.5	1018.5	1095.1	1174.5	1256.5	1341.5
15	873.4	944.3	1018.1	1094.6	1173.9	1256.1	1340.9
16	870.8	943.7	1016.3	1094.2	1172.1	1251.3	1340.4
17	925.2	1001.1	1080.0	1161.9	1246.8	1334.7	1425.6
18	892.6	965.4	1041.1	1119.6	1201.0	1285.3	1372.4
19	890.2	962.9	1038.4	1116.9	1198.1	1282.3	1369.3
20	889.0	961.7	1037.2	1115.6	1196.9	1281.0	1368.0
21	879.8	951.5	1025.9	1103.2	1183.4	1266.3	1352.0
22	878.3	950.0	1024.4	1101.6	1181.7	1264.5	1350.2
23	877.6	949.2	1023.6	1100.8	1180.8	1263.7	1349.3
24	877.4	948.9	1023.3	1100.5	1180.5	1263.3	1348.9
25	873.7	944.8	1018.8	1095.5	1175.0	1257.3	1342.4

TABLE 5(b) (CONTINUED)

CONFIG	Z=26	Z=27	Z=28	Z=29	Z=30	Z=31	Z=32
26	872.8	943.9	1017.8	1094.5	1174.0	1256.2	1341.3
27	872.4	943.5	1017.3	1094.0	1173.4	1255.7	1340.7
28	872.2	943.3	1017.2	1093.8	1173.3	1255.5	1340.5
29	870.9	941.7	1015.4	1091.7	1171.0	1252.8	1337.6
30	869.9	940.7	1014.4	1090.8	1170.0	1251.9	1336.6
31	869.5	940.4	1013.9	1090.3	1169.5	1251.4	1336.1
32	869.5	939.6	1013.0	1089.2	1168.4	1250.8	1334.2
33	864.0	933.9	1006.6	1081.9	1160.0	1240.8	1324.3
34	862.3	932.1	1004.7	1079.9	1157.9	1238.6	1322.1
35	861.6	931.4	1003.9	1079.1	1157.0	1237.7	1321.1
36	850.8	919.6	991.0	1065.1	1141.9	1221.4	1303.5
37	849.9	918.6	990.0	1064.1	1140.8	1220.2	1302.3
38	849.1	917.8	989.1	1063.1	1139.9	1219.2	1301.3
39	848.5	917.1	988.5	1062.5	1139.1	1218.5	1300.5
40	844.6	912.8	983.7	1057.2	1133.4	1212.2	1293.7
41	844.0	912.2	983.0	1056.5	1132.6	1211.4	1292.9
42	843.4	911.6	982.4	1055.9	1132.0	1210.7	1292.2
43	843.1	911.2	982.0	1055.5	1131.6	1210.3	1291.7
44	841.6	909.4	979.6	1052.5	1128.9	1207.0	1288.7
45	840.7	908.4	979.3	1051.9	1128.2	1206.9	1287.7
46	840.4	908.3	978.8	1052.0	1127.7	1206.2	1287.4
47	838.0	906.3	976.7	1045.8	1120.2	1205.5	1287.6
48	919.6	995.2	1073.9	1155.5	1240.2	1327.8	1418.4
49	859.3	929.0	1001.5	1076.6	1154.5	1235.1	1318.4
50	887.8	960.4	1035.9	1114.2	1195.3	1279.4	1366.3

TABLE 5(b) (CONTINUED)

CONFIG	Z=26	Z=27	Z=28	Z=29	Z=30	Z=31	Z=32
51	854.0	923.5	995.6	1070.6	1148.2	1228.5	1311.6
52	836.1	925.6	997.9	1072.9	1150.6	1231.1	1314.2
53	885.4	957.9	1033.3	1111.5	1192.5	1276.4	1363.2
54	852.2	921.5	993.6	1068.5	1146.0	1226.2	1309.2
55	854.9	924.5	996.7	1071.7	1149.4	1229.8	1312.9
56	884.4	956.9	1032.2	1110.4	1191.4	1275.3	1362.1
57	851.2	920.5	992.6	1067.4	1144.9	1225.1	1308.1
58*	845.0	913.5	984.6	1058.8	1135.0	1214.2	1296.1
59	875.2	946.7	1020.9	1098.0	1177.9	1260.6	1346.2
60	841.2	909.5	980.5	1054.2	1130.6	1209.6	1291.2
61	843.7	912.2	983.3	1057.1	1133.5	1212.7	1294.5
62	873.8	945.2	1019.4	1096.4	1176.2	1258.9	1344.4
63	840.6	908.3	979.2	1052.8	1129.1	1208.1	1289.7
64	843.1	911.5	982.6	1056.3	1132.7	1211.9	1293.6
65	873.1	944.5	1018.7	1095.6	1175.5	1258.1	1343.5
66	839.4	907.6	978.5	1052.1	1128.4	1207.3	1288.9
67	842.8	911.2	982.2	1056.0	1132.4	1211.5	1293.2
68	872.8	944.2	1018.3	1095.3	1175.1	1257.7	1343.1
69	839.1	907.3	978.2	1051.8	1128.0	1206.9	1288.5
70	838.8	906.7	977.4	1050.6	1126.5	1205.1	1286.3
71	869.2	940.1	1013.8	1090.4	1169.7	1251.7	1336.6
72	835.2	902.9	973.4	1046.5	1122.2	1200.6	1281.6
73	838.1	906.1	976.6	1049.9	1125.7	1204.3	1285.4
74	868.3	939.2	1012.9	1089.4	1168.6	1250.7	1335.5
75	834.4	902.2	972.6	1045.7	1121.4	1199.8	1280.7

TABLE 5(b) (CONCLUDED)

CONFIG	Z=26	Z=27	Z=28	Z=29	Z=30	Z=31	Z=32
76	837.7	905.6	976.2	1049.4	1125.2	1203.7	1284.9
77	867.9	938.8	1012.4	1088.9	1168.1	1250.2	1335.0
78	834.1	901.8	972.2	1045.2	1120.9	1199.3	1280.3
79	837.5	905.4	976.0	1049.2	1125.0	1203.5	1284.7
80	867.7	938.6	1012.3	1088.7	1168.0	1250.0	1334.8
81	833.9	901.6	972.0	1045.1	1120.7	1199.1	1280.0
82*	835.9	903.5	973.8	1046.9	1122.3	1200.5	1281.7
83	866.3	937.0	1010.4	1086.7	1165.7	1247.4	1332.0
84	832.3	899.8	970.1	1042.4	1118.5	1196.1	1277.0
85	835.2	902.8	973.4	1045.9	1121.8	1200.0	1280.6
86	865.5	936.1	1009.4	1085.7	1164.6	1246.4	1330.9
87	831.4	899.1	969.3	1041.9	1117.2	1195.5	1276.1
88	834.8	902.4	972.7	1045.6	1121.1	1199.3	1280.2
89	865.1	935.7	1009.1	1085.2	1164.2	1245.9	1330.4
90	831.3	898.6	968.7	1041.5	1116.9	1194.9	1275.6
91*	829.0	901.2	968.7	1039.4	1114.6	1201.1	1282.0
92	864.5	934.8	1008.3	1084.2	1162.6	1243.5	1329.2
93	829.9	899.9	966.9	1038.3	1113.8	1195.4	1272.6

TABLE 6(a)–CONFIGURATION LIST FOR 7 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S 2S 2P 3S 3P 3D 4S 4P 4D 4F 5S 5P 5D 5F 6S 6P 6D 7S
GROUND CONFIGURATION		
1	ODD	1 2 3
ONE-ELECTRON EXCITED CONFIGURATIONS		
2		2 2 2 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3	ODD	2 2 2 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
4		2 2 2 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
5		2 2 2 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
6	ODD	2 2 2 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
7		2 2 2 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
8	ODD	2 2 2 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
9		2 2 2 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
10	ODD	2 2 2 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
11		2 2 2 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
12	ODD	2 2 2 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
13		2 2 2 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
14	ODD	2 2 2 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
15		2 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
16		2 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
17		2 1 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
18	ODD	2 1 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
19		2 1 3 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
20	ODD	2 1 3 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
21	ODD	2 1 3 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
22		2 1 3 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
23	ODD	2 1 3 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
24		2 1 3 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
25	ODD	2 1 3 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
26		2 1 3 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
27	ODD	2 1 3 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
28		2 1 3 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
29	ODD	2 1 3 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
30		2 1 3 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
31	ODD	2 1 3 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
32	ODD	2 1 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
TWO-ELECTRON EXCITED CONFIGURATIONS		
33	ODD	2 2 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0
34		2 2 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0
35	ODD	2 2 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0
36	ODD	2 2 1 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0
37		2 2 1 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0
38	ODD	2 2 1 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0
39		2 2 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0
40	ODD	2 2 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0
41		2 2 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0
42	ODD	2 2 1 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0
43		2 2 1 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0
44	ODD	2 2 1 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0
45		2 2 1 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0
46	ODD	2 2 1 1 0 0 0 0 0 0 0 0 0 0 0 0 1 0
47	ODD	2 2 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1

TABLE 6(a) (CONCLUDED)

49		2	1	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51		2	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53		2	0	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
55		2	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
57		2	0	3	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
59		2	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
61		2	1	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
63		2	0	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
65		2	0	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
67		2	1	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
69		2	0	3	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
71		2	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
73		2	1	2	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
75		2	0	3	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
77		2	0	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
79		2	1	2	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
81		2	0	3	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
83		2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
85		2	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
87		2	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
89		2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
91		2	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
93		2	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1

TABLE 6(b)–7 ELECTRONS

CONFIG	Z=14	Z=15	Z=16	Z=17	Z=18	Z=19	Z=20
1	251.4	304.0	349.8	393.9	451.3	506.9	565.7
2	254.8	304.3	341.1	388.6	439.2	492.8	549.6
3	254.3	305.3	339.7	387.1	437.5	491.1	547.8
4	253.7	304.7	339.3	386.2	436.6	490.1	546.7
5	253.0	303.7	337.4	384.3	434.1	487.1	543.1
6	252.2	302.9	336.5	383.3	433.1	486.0	542.0
7	251.9	302.5	336.2	382.9	432.7	485.5	541.4
8	251.8	302.4	336.0	382.7	432.5	485.3	541.2
9	251.7	302.1	335.5	382.2	431.7	484.3	540.0
10	251.3	301.5	335.1	381.6	431.1	483.7	539.3
11	251.1	301.4	334.9	381.3	430.9	483.4	539.0
12	251.0	301.4	334.8	381.3	430.8	483.3	538.9
13	251.0	301.4	334.7	381.4	430.9	483.2	538.7
14	250.7	301.2	334.4	380.9	430.1	482.6	538.1
15	250.6	300.9	334.2	380.5	429.8	482.3	537.7
16	251.0	300.4	335.1	380.8	431.7	481.0	538.0
17	252.3	301.2	340.8	385.7	447.3	503.1	561.7
18	253.4	304.1	338.6	385.8	436.2	489.6	546.2
19	252.9	303.2	337.2	384.3	434.6	487.9	544.3
20	251.6	302.5	336.4	383.5	433.7	487.0	543.4
21	250.9	301.4	334.9	381.6	431.2	484.0	539.8
22	250.3	300.5	334.1	380.6	430.2	482.9	538.7
23	249.9	300.3	333.7	380.2	429.8	482.4	538.1
24	249.8	300.1	333.6	380.1	429.6	482.2	537.9
25	249.7	299.9	333.2	379.5	428.9	481.3	536.7

TABLE 6(b) (CONTINUED)

CONFIG	Z=14	Z=15	Z=16	Z=17	Z=18	Z=19	Z=20
26	249.2	289.4	332.7	378.9	428.3	480.6	536.0
27	249.1	289.2	332.5	378.7	428.0	480.3	535.7
28	249.0	289.2	332.4	378.6	427.9	480.2	535.6
29	249.2	289.3	332.5	378.7	427.9	480.0	535.4
30	248.7	288.9	332.0	378.2	427.2	479.5	534.7
31	248.5	288.7	331.8	377.9	427.0	479.2	534.4
32	250.0	288.5	332.0	377.4	428.0	478.8	535.6
33	249.9	289.9	332.8	378.6	427.5	479.3	534.0
34	247.8	287.5	330.2	375.9	424.5	476.1	530.7
35	247.0	286.7	329.3	374.9	423.4	475.0	529.5
36*	246.2	285.5	327.7	373.8	420.8	471.7	525.6
37	245.4	284.6	326.8	371.8	419.8	470.7	524.5
38	245.1	284.2	326.3	371.3	419.3	470.1	523.9
39	244.9	284.1	326.1	371.1	419.1	469.9	523.7
40	244.7	283.7	325.6	370.4	419.1	468.8	522.3
41	244.4	283.4	325.3	370.0	417.7	468.3	521.8
42	244.2	283.1	325.0	369.7	417.4	467.9	521.4
43	244.1	283.1	324.9	369.6	417.3	467.8	521.3
44*	244.9	283.1	325.1	369.1	417.2	467.6	521.5
45	244.0	282.8	324.6	369.0	416.7	467.1	520.5
46	243.7	282.5	324.3	368.9	416.4	466.8	520.0
47*	242.1	285.9	322.6	371.1	412.7	468.2	518.5
48	256.1	298.2	343.5	392.0	443.8	498.0	557.2
49	247.5	287.2	329.9	375.5	424.1	475.6	530.2
50	251.1	291.8	335.7	382.7	432.8	486.0	542.3

TABLE 6(b) (CONTINUED)

CONFIG	Z=14	Z=15	Z=16	Z=17	Z=18	Z=19	Z=20
51	244.7	284.2	326.5	371.9	420.3	471.6	525.9
52	246.1	285.5	328.1	373.6	422.0	473.4	527.8
53	249.9	290.5	334.3	381.2	431.2	484.3	540.5
54	244.0	283.4	325.6	370.9	419.1	470.3	524.5
55	245.4	284.8	327.3	372.7	421.1	472.4	526.8
56	249.3	289.9	333.5	380.4	430.4	483.4	539.6
57	243.4	282.7	324.9	370.1	418.3	469.5	523.6
58*	244.5	283.6	325.6	370.5	418.4	469.2	522.9
59	248.6	288.9	332.2	378.5	428.0	480.5	536.0
60	242.5	281.3	323.1	367.8	415.8	466.1	519.5
61	243.8	282.4	324.7	369.4	417.4	468.1	521.8
62	247.8	288.0	331.3	377.6	426.9	479.4	534.9
63	241.8	280.5	322.3	367.0	414.6	465.1	518.5
64	243.4	282.4	324.3	369.2	417.0	467.6	521.2
65	247.6	287.7	330.9	377.2	426.5	478.9	534.4
66	241.5	280.3	322.0	366.6	414.2	464.6	518.0
67	243.3	282.3	324.3	369.0	416.7	467.4	521.0
68	247.5	287.6	330.8	377.0	426.3	478.7	534.2
69	241.4	280.1	321.8	366.4	414.0	464.4	517.8
70	243.1	282.0	323.7	368.3	415.8	466.3	519.6
71	247.4	287.4	330.4	376.5	425.6	477.8	533.0
72	241.2	279.8	321.4	365.8	413.1	463.3	516.4
73	242.9	281.6	323.3	367.8	415.4	465.8	519.1
74	246.9	286.9	329.9	375.9	425.0	477.1	532.3
75	240.8	279.4	320.9	365.3	412.6	462.8	515.9

TABLE 6(b) (CONTINUED)

CONFIG	Z=14	Z=15	Z=16	Z=17	Z=18	Z=19	Z=20
76	242.6	281.4	323.0	367.6	415.1	465.5	518.7
77	246.8	286.7	329.7	375.7	424.8	476.9	532.0
78	240.7	279.2	320.7	365.1	412.3	462.5	515.6
79	242.5	281.3	322.9	367.5	415.0	465.3	518.6
80	246.7	286.5	329.5	375.6	424.7	476.7	531.9
81	240.6	279.2	320.6	365.0	412.2	462.4	515.5
82*	243.0	281.3	322.9	367.1	415.1	465.1	518.6
83	245.9	286.5	329.7	375.7	424.7	476.6	531.7
84	241.1	279.2	320.6	364.5	412.5	461.9	515.2
85	242.5	280.8	322.6	367.0	414.4	464.7	517.7
86	246.5	285.4	329.2	375.1	424.1	476.0	531.0
87	240.4	278.8	320.4	364.3	411.7	461.6	514.6
88	242.1	280.8	322.3	366.8	414.1	464.3	517.4
89	246.1	286.2	329.0	374.9	423.8	475.7	530.7
90	240.2	278.7	320.0	364.3	411.4	461.4	514.2
91*	241.4	282.7	319.2	359.4	410.9	466.1	519.1
92	247.3	286.1	329.6	374.4	424.6	474.8	531.2
93	239.7	281.5	315.9	357.5	407.2	463.0	514.8

TABLE 6(b) (CONTINUED)

CONFIG	Z=21	Z=22	Z=23	Z=24	Z=25	Z=26	Z=27
1	627.8	693.1	761.7	833.6	908.7	987.0	1068.6
2	600.5	672.5	738.7	807.9	880.3	955.7	1034.3
3	597.5	670.4	736.4	805.5	877.8	953.1	1031.5
4	596.4	669.3	735.2	804.3	876.4	951.7	1030.1
5	592.2	664.3	729.5	797.8	869.1	943.5	1021.0
6	591.0	663.1	728.2	796.4	867.7	942.0	1019.4
7	590.4	662.4	727.5	795.7	866.9	941.2	1018.5
8	590.2	662.2	727.3	795.4	866.6	940.9	1018.2
9	588.7	660.6	725.2	793.0	863.8	937.7	1014.6
10	588.0	659.7	724.4	792.2	863.0	936.8	1013.7
11	587.6	659.3	724.0	791.7	862.5	936.3	1013.2
12	587.5	659.1	723.8	791.6	862.4	936.2	1013.0
13	587.1	658.7	723.4	790.9	861.4	935.2	1011.6
14	586.4	658.0	722.4	790.0	860.6	934.2	1010.9
15	586.1	657.5	722.0	789.6	860.1	933.7	1010.3
16	586.2	657.0	722.5	787.7	861.2	932.0	1008.5
17	623.5	689.5	756.9	828.5	903.4	981.5	1062.8
18	605.9	668.7	734.6	803.6	875.7	951.0	1029.3
19	603.9	666.6	732.3	801.2	873.2	948.4	1026.6
20	602.9	665.5	731.2	800.1	872.0	947.1	1025.3
21	598.7	660.5	725.6	793.6	864.7	938.9	1016.2
22	597.5	659.3	724.2	792.2	863.3	937.4	1014.6
23	596.9	658.7	723.6	791.5	862.6	936.6	1013.8
24	596.7	658.5	723.3	791.3	862.3	936.3	1013.4
25	595.2	656.7	721.3	788.9	859.5	933.2	1009.9

TABLE 6(b) (CONTINUED)

CONFIG	Z=21	Z=22	Z=23	Z=24	Z=25	Z=26	Z=27
25	594.5	656.0	720.5	788.0	859.7	932.3	1009.0
27	594.1	655.6	720.1	787.6	854.2	931.8	1008.5
28	594.0	655.5	720.0	787.5	859.0	931.7	1008.3
29	593.8	655.0	719.5	786.7	857.2	930.6	1007.0
30	593.0	654.3	718.6	785.8	856.3	929.6	1006.1
31	592.6	653.9	718.2	785.5	855.9	929.2	1005.6
32	592.2	653.7	717.5	784.4	855.2	927.9	1006.4
33	591.8	652.5	716.2	782.9	852.5	925.1	1000.7
34	583.2	648.7	712.2	778.6	848.0	920.4	995.8
35	587.0	647.4	710.8	777.2	846.6	918.9	994.2
35*	582.4	642.2	704.8	770.4	838.9	910.3	984.6
37	581.2	640.9	703.5	769.0	837.4	908.8	983.1
38	580.6	640.2	702.8	768.3	836.7	908.0	982.2
39	580.3	639.9	702.5	767.9	836.3	907.6	981.8
40	578.7	638.0	700.2	765.3	833.3	904.2	978.0
41	578.1	637.4	699.5	764.7	832.7	903.6	977.3
42	577.8	637.0	699.2	764.2	832.2	903.0	976.8
43	577.5	636.9	699.0	764.1	832.0	902.8	976.6
44*	577.7	636.2	698.5	762.9	831.3	902.3	975.0
45	576.5	635.8	697.6	762.4	830.1	900.6	974.6
46	576.1	635.3	697.3	762.0	829.8	900.2	973.9
47*	572.4	636.1	694.3	759.2	834.1	903.5	973.0
48	613.7	693.5	751.6	822.9	897.5	975.3	1056.3
49	597.7	643.2	711.7	778.1	847.5	919.9	995.2
50	601.7	664.3	729.9	798.7	870.6	945.6	1023.7

TABLE 6(b) (CONTINUED)

CON=IG	Z=21	Z=22	Z=23	Z=24	Z=25	Z=26	Z=27
51	583.1	643.3	706.6	772.7	841.9	914.0	989.1
52	585.2	645.5	708.8	775.0	844.3	916.5	991.6
53	599.8	662.2	727.7	796.4	868.1	943.0	1020.9
54	581.6	641.7	704.8	770.8	839.8	911.8	986.8
55	584.1	644.3	707.6	773.8	843.0	915.2	990.3
56	598.9	661.2	726.7	795.3	867.0	941.8	1019.8
57	580.7	640.7	703.8	769.8	838.8	910.7	985.6
58*	579.5	639.0	701.5	766.9	835.2	906.4	980.8
59	594.7	656.3	721.1	788.9	859.8	933.7	1010.7
60	576.0	635.3	697.5	762.7	830.8	901.9	975.8
61	578.3	637.8	700.2	765.5	833.8	905.0	979.1
62	593.4	655.0	719.7	787.5	858.3	932.1	1009.1
63	574.9	634.2	696.3	761.5	829.5	900.5	974.4
64	577.8	637.2	699.6	764.9	833.1	904.2	978.3
65	592.9	654.5	719.1	786.8	857.6	931.4	1008.3
66	574.4	633.6	695.8	760.9	828.9	899.8	973.7
67	577.3	636.9	699.3	764.5	832.8	903.9	977.9
69	592.7	654.2	718.8	786.5	857.3	931.1	1008.0
69	574.1	633.3	695.5	760.5	828.5	899.4	973.3
70	575.8	635.0	697.0	761.9	829.8	900.5	974.1
71	591.2	652.5	716.8	784.2	854.6	928.0	1004.5
72	572.5	631.4	693.2	758.0	825.6	896.1	969.5
73	575.2	634.4	696.4	761.3	829.1	899.8	973.4
74	590.5	651.7	716.0	783.3	853.7	927.1	1003.5
75	571.9	630.8	692.6	757.2	824.9	895.4	968.7

TABLE 6(b) (CONTINUED)

CON=16	Z=21	Z=22	Z=23	Z=24	Z=25	Z=26	Z=27
76	574.9	634.0	696.0	760.9	828.6	899.3	972.9
77	590.2	651.4	715.8	782.9	853.3	926.7	1003.1
78	571.6	630.4	692.2	756.9	824.5	894.9	968.3
79	574.8	633.9	695.8	760.7	828.5	899.1	972.7
80	590.0	651.2	715.5	782.8	853.1	926.5	1002.9
81	571.4	630.3	692.1	756.7	824.3	894.8	968.1
82*	574.3	633.1	695.2	760.0	827.3	898.4	971.2
83	589.3	650.7	714.9	782.0	852.2	925.4	1001.6
84	570.7	629.6	691.2	756.0	823.3	893.6	966.7
85	573.6	632.5	694.5	759.1	826.6	896.9	970.4
85	589.0	650.0	714.1	781.2	851.4	924.5	1000.7
87	570.3	628.9	690.8	755.2	822.6	892.7	965.8
88	573.4	632.3	694.1	758.7	826.3	896.6	970.0
89	588.7	649.7	713.8	780.8	851.0	924.1	1000.2
90	570.0	628.8	690.3	754.7	822.1	892.3	965.4
91*	569.1	635.1	691.0	754.9	826.2	895.9	968.5
92	588.3	650.2	713.8	779.8	851.1	923.4	1000.4
93	568.3	631.0	687.2	750.8	823.7	888.4	967.1

TABLE 6(b) (CONTINUED)

CONFIG	Z=28	Z=29	Z=30	Z=31	Z=32	Z=33	Z=34
1	1153.5	1241.5	1332.9	1427.5	1525.3	1626.4	1730.8
2	1116.0	1200.7	1288.6	1379.6	1473.8	1571.0	1671.3
3	1113.1	1197.7	1285.5	1376.4	1470.4	1567.5	1667.7
4	1111.6	1196.2	1284.0	1374.8	1468.7	1565.8	1666.0
5	1101.5	1185.1	1271.7	1361.4	1454.2	1550.0	1648.9
6	1099.8	1183.3	1269.9	1359.5	1452.2	1548.0	1646.8
7	1098.9	1182.4	1268.9	1358.5	1451.2	1546.9	1645.7
8	1098.5	1182.0	1268.5	1358.1	1450.8	1546.5	1645.3
9	1094.6	1177.6	1263.7	1352.7	1444.9	1540.1	1638.3
10	1093.6	1176.6	1262.5	1351.7	1443.8	1538.9	1637.1
11	1093.1	1176.1	1262.0	1351.1	1443.1	1538.3	1636.4
12	1092.9	1175.9	1261.9	1350.9	1442.9	1538.0	1636.2
13	1091.3	1173.9	1259.9	1348.6	1440.5	1535.3	1633.0
14	1090.4	1173.1	1258.9	1347.5	1439.4	1534.1	1631.8
15	1089.9	1172.6	1258.3	1347.1	1438.8	1533.6	1631.4
16	1088.7	1172.3	1259.1	1347.9	1433.6	1530.3	1628.5
17	1147.4	1235.2	1326.3	1420.6	1519.2	1619.1	1723.2
18	1110.8	1195.3	1283.0	1373.8	1467.7	1564.7	1664.8
19	1107.9	1192.4	1279.9	1370.6	1464.4	1561.2	1661.2
20	1106.6	1191.0	1278.5	1369.1	1462.8	1559.7	1659.6
21	1096.5	1179.8	1266.7	1355.8	1448.3	1543.9	1642.6
22	1094.8	1178.1	1264.5	1353.9	1446.4	1541.9	1640.5
23	1094.0	1177.2	1263.5	1352.9	1445.4	1540.9	1639.5
24	1093.6	1176.8	1263.2	1352.5	1445.0	1540.4	1639.0
25	1088.7	1172.5	1258.3	1347.2	1439.1	1534.1	1632.0

TABLE 6(b) (CONTINUED)

CONFIG	Z=28	Z=29	Z=30	Z=31	Z=32	Z=33	Z=34
26	1088.7	1171.5	1237.3	1346.1	1438.0	1532.9	1630.9
27	1088.2	1170.9	1236.7	1345.5	1437.4	1532.3	1630.2
28	1088.0	1170.7	1236.5	1345.3	1437.1	1532.0	1630.0
29	1086.5	1169.0	1234.6	1343.1	1434.6	1529.6	1627.0
30	1085.5	1168.0	1233.4	1342.1	1433.6	1528.1	1625.7
31	1085.0	1167.5	1233.0	1341.5	1433.0	1527.6	1625.2
32	1083.7	1167.4	1233.4	1340.5	1430.9	1526.2	1623.7
33	1079.3	1160.8	1225.3	1332.7	1423.1	1516.5	1612.9
34	1074.1	1155.1	1220.7	1326.9	1417.1	1510.3	1606.5
35	1072.5	1153.8	1218.0	1325.2	1415.3	1508.5	1604.6
35*	1061.9	1142.0	1205.2	1311.2	1400.1	1492.0	1586.8
37	1060.3	1140.4	1203.4	1309.4	1398.3	1490.1	1584.9
38	1059.4	1139.5	1202.5	1308.4	1397.2	1489.0	1583.7
39	1059.0	1139.0	1202.0	1307.9	1396.8	1488.5	1583.2
40	1054.7	1134.3	1196.3	1302.2	1390.6	1481.8	1575.9
41	1054.0	1133.6	1196.1	1301.4	1389.7	1480.8	1575.0
42	1053.4	1133.0	1195.4	1300.8	1389.1	1480.2	1574.3
43	1053.2	1132.8	1195.2	1300.6	1388.8	1480.0	1574.0
44*	1051.3	1130.5	1193.4	1298.4	1385.6	1477.1	1570.8
45	1051.0	1130.2	1193.0	1297.1	1384.2	1476.1	1569.9
46	1050.2	1129.6	1192.5	1296.7	1384.6	1475.5	1569.1
47*	1045.5	1124.3	1187.5	1291.3	1379.9	1470.8	1564.2
48	1140.6	1223.2	1289.9	1413.0	1510.3	1610.9	1714.7
49	1073.5	1154.8	1220.1	1326.3	1416.5	1509.7	1605.8
50	1104.2	1183.2	1276.6	1367.1	1460.8	1557.5	1657.4

TABLE 6(b) (CONTINUED)

CONFIG	Z=28	Z=29	Z=30	Z=31	Z=32	Z=33	Z=34
51	1067.1	1148.1	1232.1	1319.1	1409.0	1501.9	1597.8
52	1069.8	1150.9	1235.0	1322.0	1412.0	1503.0	1601.0
53	1102.0	1186.2	1273.5	1363.9	1457.5	1554.1	1653.9
54	1064.7	1145.6	1229.5	1316.3	1406.1	1498.9	1594.7
55	1068.4	1149.4	1233.5	1320.5	1410.5	1503.4	1599.4
56	1100.8	1185.0	1272.2	1362.6	1456.1	1552.7	1652.4
57	1063.5	1144.4	1228.2	1315.0	1404.8	1497.5	1593.2
58*	1057.7	1137.7	1220.6	1306.5	1395.2	1488.9	1581.5
59	1090.8	1173.9	1260.1	1349.3	1441.6	1537.0	1635.4
60	1052.7	1132.5	1215.2	1300.8	1389.4	1480.9	1575.3
61	1056.1	1136.0	1218.9	1304.7	1393.4	1485.0	1579.6
62	1089.1	1172.1	1258.2	1347.4	1439.7	1535.0	1633.3
63	1051.2	1130.9	1213.6	1299.2	1387.7	1479.1	1573.4
64	1055.3	1135.2	1218.0	1303.8	1392.5	1484.1	1578.6
65	1088.3	1171.3	1257.4	1346.5	1438.7	1534.0	1632.3
66	1050.5	1130.2	1212.8	1298.3	1386.8	1478.2	1572.5
67	1054.9	1134.9	1217.6	1303.3	1392.0	1483.6	1578.1
68	1087.9	1170.9	1257.0	1346.1	1438.3	1533.5	1631.8
69	1050.0	1129.7	1212.3	1297.9	1386.3	1477.7	1572.0
70	1050.7	1130.1	1212.4	1297.7	1385.8	1476.8	1570.8
71	1084.0	1166.6	1252.1	1340.8	1432.5	1527.2	1624.9
72	1045.9	1125.1	1207.2	1292.3	1380.2	1471.0	1564.8
73	1049.9	1129.3	1211.6	1296.8	1384.9	1475.8	1569.8
74	1083.0	1165.5	1251.1	1339.7	1431.4	1526.1	1623.8
75	1045.0	1124.3	1206.4	1291.3	1379.3	1470.0	1563.8

TABLE 6(b) (CONCLUDED)

CONFIG	Z=28	Z=29	Z=30	Z=31	Z=32	Z=33	Z=34
76	1049.4	1129.8	1211.0	1296.2	1384.3	1475.3	1569.2
77	1082.5	1165.0	1250.6	1339.1	1430.8	1525.4	1623.1
78	1044.5	1123.5	1205.3	1290.8	1378.7	1469.5	1563.2
79	1049.2	1128.6	1210.3	1296.0	1384.1	1475.0	1568.9
80	1082.3	1164.5	1250.4	1338.9	1430.5	1525.2	1622.9
81	1044.4	1123.5	1205.5	1290.6	1378.4	1469.2	1562.9
82*	1047.3	1126.2	1208.6	1293.4	1381.6	1472.2	1565.2
83	1080.9	1163.1	1248.4	1336.7	1428.1	1522.6	1619.8
84	1042.6	1121.2	1203.5	1289.0	1375.9	1466.4	1559.6
85	1046.3	1125.7	1207.7	1292.7	1380.5	1471.1	1564.7
86	1079.8	1162.1	1247.3	1335.7	1427.0	1521.3	1618.7
87	1041.9	1120.8	1202.3	1237.1	1374.6	1465.3	1558.4
88	1046.2	1125.1	1207.3	1292.2	1379.9	1470.6	1564.1
89	1079.4	1161.7	1246.9	1335.2	1426.4	1520.8	1618.1
90	1041.4	1120.4	1202.1	1286.8	1374.4	1464.8	1558.1
91*	1040.9	1119.9	1201.9	1290.0	1373.3	1473.2	1560.1
92	1078.8	1161.2	1246.7	1333.3	1425.1	1518.7	1616.1
93	1041.5	1124.0	1199.5	1283.3	1374.3	1462.5	1557.8

TABLE 7(a)–CONFIGURATION LIST FOR 8 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S 2S 2P 3S 3P 3D 4S 4P 4D 4F 5S 5P 5D 5F 6S 6P 6D 7S
GROUND CONFIGURATION		
1		2 2 4
ONE-ELECTRON EXCITED CONFIGURATIONS		
2	ODD	2 2 3 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
3		2 2 3 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0
4	EVEN	2 2 3 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0
5	ODD	2 2 3 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0
6		2 2 3 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0
7	ODD	2 2 3 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0
8		2 2 3 0 0 0 0 0 0 1 0 0 0 0 1 0 0 0 0
9	ODD	2 2 3 0 0 0 0 0 0 0 1 0 0 0 1 0 0 0 0
10		2 2 3 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0
11	ODD	2 2 3 0 0 0 0 0 0 0 0 0 1 0 1 0 0 0 0
12		2 2 3 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0
13	ODD	2 2 3 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0
14		2 2 3 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0
15	ODD	2 2 3 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0
16		2 2 3 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 1
17	ODD	2 1 5 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
18		2 1 4 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
19	ODD	2 1 4 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0
20		2 1 4 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0
21		2 1 4 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0
22	EVEN	2 1 4 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0
23		2 1 4 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0
24	ODD	2 1 4 0 0 0 0 0 0 1 0 0 0 0 1 0 0 0 0
25		2 1 4 0 0 0 0 0 0 0 1 0 0 0 1 0 0 0 0
26	ODD	2 1 4 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0
27		2 1 4 0 0 0 0 0 0 0 0 0 1 0 1 0 0 0 0
28	ODD	2 1 4 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0
29		2 1 4 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0
30	ODD	2 1 4 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0
31		2 1 4 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0
32		2 1 4 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 1
TWO-ELECTRON EXCITED CONFIGURATIONS		
33		2 2 2 2 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
34	EVEN	2 2 2 1 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0
35		2 2 2 1 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0
36		2 2 2 1 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0
37	ODD	2 2 2 1 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0
38		2 2 2 1 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0
39	ODD	2 2 2 1 0 0 0 0 0 1 0 0 0 0 1 0 0 0 0
40		2 2 2 1 0 0 0 0 0 0 1 0 0 0 1 0 0 0 0
41	ODD	2 2 2 1 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0
42		2 2 2 1 0 0 0 0 0 0 0 0 1 0 1 0 0 0 0
43	ODD	2 2 2 1 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0
44		2 2 2 1 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0
45	ODD	2 2 2 1 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0
46		2 2 2 1 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0
47		2 2 2 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 1

TABLE 7(a) (CONCLUDED)

TABLE 7(b)–8 ELECTRONS

CONFIG	Z=16	Z=17	Z=18	Z=19	Z=20	Z=21	Z=22
1	367.6	415.4	470.8	529.7	592.1	658.0	727.4
2	356.0	406.4	460.1	517.2	577.6	641.4	708.5
3	354.6	404.8	458.4	515.3	575.6	639.3	706.3
4	353.8	403.9	457.4	514.3	574.5	638.1	705.1
5	352.8	402.8	456.6	513.0	573.7	634.7	701.0
6	351.9	401.8	454.6	510.9	570.5	633.4	699.6
7	351.5	401.1	454.1	510.3	569.9	632.8	699.0
8	351.4	401.0	453.9	510.1	569.7	632.5	698.7
9	351.2	400.7	453.4	509.4	568.8	631.4	697.3
10	350.7	400.1	452.8	508.8	568.1	630.7	696.6
11	350.4	399.8	452.5	508.5	567.8	630.3	696.2
12	350.4	399.8	452.4	508.4	567.7	630.2	696.1
13	350.6	400.1	452.4	508.6	567.8	629.9	696.1
14	350.1	399.4	452.1	507.8	566.9	629.3	695.1
15	349.9	399.1	451.7	507.5	566.7	629.1	694.6
16	351.2	399.3	451.8	507.8	566.0	630.7	694.3
17	360.3	411.9	467.0	525.6	587.7	653.3	722.4
18	353.2	403.2	456.7	513.5	573.7	637.2	704.1
19	351.7	401.7	455.0	511.7	571.8	635.2	701.9
20	350.9	400.9	454.1	510.7	570.7	634.1	700.8
21	350.0	399.9	452.9	508.4	567.9	630.6	696.7
22	349.1	398.9	451.9	507.3	566.7	629.4	695.4
23	348.7	398.1	450.8	506.8	566.2	628.8	694.8
24	348.6	398.0	450.6	506.6	565.9	628.6	694.5
25	348.4	397.6	450.2	506.0	565.0	627.4	693.1

TABLE 7(b) (CONTINUED)

CONFIG	Z=16	Z=17	Z=18	Z=19	Z=20	Z=21	Z=22
26	347.7	397.1	449.5	505.3	564.4	626.7	692.4
27	347.7	396.8	449.3	505.0	564.1	626.4	692.0
28	347.5	396.5	449.2	504.9	563.9	626.3	691.8
29	347.5	397.0	449.2	505.1	563.9	626.1	691.8
30	347.7	396.4	448.8	504.3	563.2	625.4	690.9
31	347.2	396.1	448.5	504.0	563.0	625.1	690.5
32	347.7	396.3	448.4	504.7	563.0	625.2	690.2
33	348.8	397.7	449.7	505.0	563.5	625.3	690.2
34	346.3	395.0	446.8	501.9	560.2	621.7	686.4
35	345.3	393.9	445.7	500.7	558.9	620.3	685.0
36*	344.4	392.5	443.9	498.2	555.9	616.7	680.7
37	343.4	391.4	442.7	497.1	554.6	615.4	679.3
38	342.9	390.9	442.1	496.5	554.0	614.7	678.6
39	342.7	390.7	441.9	496.2	553.7	614.4	678.3
40	342.5	390.5	441.8	496.4	552.7	613.1	676.7
41	342.1	389.9	440.9	494.9	552.2	612.6	676.2
42	341.9	389.6	440.5	494.6	551.8	612.2	675.7
43	341.7	389.5	440.4	494.5	551.7	612.0	675.6
44*	341.3	390.2	440.8	494.9	551.4	611.9	675.5
45	341.4	389.1	440.0	494.1	550.3	611.2	674.7
46	341.1	388.9	439.6	493.6	550.7	610.9	674.1
47*	340.9	388.3	441.2	491.0	552.0	611.5	673.1
48	356.7	404.0	452.7	521.0	582.8	648.1	716.9
49	348.6	396.2	446.0	501.0	559.3	620.8	685.5
50	350.0	398.0	448.0	503.5	561.4	622.7	699.3

TABLE 7(b) (CONTINUED)

CONFIG	Z=16	Z=17	Z=18	Z=19	Z=20	Z=21	Z=22
51	340.1	390.4	441.9	496.6	554.5	615.8	680.2
52	342.3	392.6	443.9	498.8	556.8	618.1	682.6
53	349.5	399.8	451.3	507.7	567.5	630.6	697.1
54	331.0	380.2	440.5	495.2	553.0	614.0	678.3
55	340.0	391.3	442.9	497.6	555.7	616.9	681.3
56	347.8	397.4	450.4	506.8	566.3	629.6	696.0
57	340.3	391.4	439.7	494.2	552.0	613.0	677.2
58*	341.0	392.3	440.9	495.1	553.6	613.2	677.0
59	345.0	396.1	448.7	504.5	563.7	625.2	692.0
60	330.0	384.7	437.6	491.6	548.8	609.1	672.7
61	341.0	392.8	439.8	494.0	551.4	611.9	675.6
62	346.0	396.1	447.5	503.4	562.5	624.9	690.6
63	330.2	385.4	436.6	490.5	547.7	608.0	671.4
64	340.5	393.6	439.3	493.5	550.8	611.3	675.0
65	345.6	397.7	447.3	502.9	562.0	624.3	690.0
66	337.8	388.1	436.2	490.1	547.2	607.4	670.9
67	340.4	392.1	439.1	493.2	550.5	611.0	674.7
68	345.5	396.5	447.0	502.7	561.7	624.1	689.7
69	337.7	388.3	436.3	489.8	546.9	607.1	670.5
70	340.1	392.7	438.5	492.4	549.5	609.8	673.1
71	345.3	396.4	446.5	502.0	560.9	623.0	688.4
72	337.3	388.4	436.4	489.1	545.9	606.9	669.0
73	339.7	392.3	438.1	491.9	549.0	609.2	672.5
74	344.9	397.2	445.9	501.4	559.3	622.3	687.6
75	337.0	388.2	436.8	488.5	545.3	605.2	668.4

TABLE 7(b) (CONTINUED)

CONFIG	Z=16	Z=17	Z=18	Z=19	Z=20	Z=21	Z=22
76	330.5	387.0	437.7	491.6	548.6	609.8	672.1
77	344.6	393.5	445.7	501.1	559.9	621.9	687.3
78	336.8	384.1	434.6	488.2	545.0	605.0	668.0
79	339.4	386.8	437.6	491.5	549.5	608.7	672.0
80	344.5	393.4	445.5	501.0	559.8	621.8	687.1
81	336.7	384.0	434.5	488.1	544.9	604.8	667.9
82*	339.5	387.5	437.6	491.3	548.4	608.3	671.7
83	344.7	393.5	445.7	501.3	559.8	621.7	686.9
84	336.9	384.2	434.3	488.3	544.9	604.9	667.6
85	339.0	386.5	437.2	491.0	547.6	608.0	670.9
86	344.3	393.1	445.1	500.4	559.1	621.0	686.1
87	336.3	383.3	433.9	487.5	544.3	604.0	666.7
88	338.8	386.1	436.9	490.6	547.5	607.4	670.6
89	344.1	392.3	444.9	500.2	558.8	620.6	685.8
90	336.2	383.4	433.7	487.3	543.9	603.6	666.5
91*	339.4	387.3	440.3	495.6	553.1	615.9	678.9
92	344.3	393.5	444.9	500.7	558.0	621.6	685.2
93	338.7	386.7	438.4	493.9	551.7	614.2	678.3

TABLE 7(b) (CONTINUED)

CONFIG	Z=23	Z=24	Z=25	Z=26	Z=27	Z=28	Z=29
1	800.2	876.6	956.5	1039.9	1126.8	1217.2	1311.0
2	779.0	852.9	930.1	1010.7	1094.7	1182.0	1272.7
3	776.7	850.4	927.5	1008.0	1091.8	1179.0	1269.5
4	775.4	849.1	926.1	1006.5	1090.3	1177.4	1267.9
5	770.5	843.5	919.8	999.3	1082.2	1168.4	1257.9
6	769.2	842.1	918.2	997.7	1080.5	1166.6	1256.1
7	768.5	841.3	917.4	996.9	1079.6	1165.7	1255.1
8	768.2	841.0	917.1	996.5	1079.3	1165.3	1254.7
9	766.5	839.0	914.8	993.9	1076.2	1161.9	1250.8
10	765.7	838.2	914.0	993.0	1075.3	1160.9	1249.8
11	765.3	837.8	913.5	992.5	1074.8	1160.4	1249.2
12	765.2	837.6	913.3	992.3	1074.6	1160.2	1249.0
13	764.5	837.2	912.7	991.6	1073.7	1159.0	1247.8
14	763.0	835.4	911.8	990.5	1072.6	1157.9	1246.5
15	763.5	835.9	911.3	990.1	1072.2	1157.5	1246.1
16	762.3	834.2	910.2	988.5	1070.7	1156.0	1244.5
17	795.0	871.1	950.7	1033.8	1120.4	1210.5	1304.1
18	774.4	848.0	925.0	1005.4	1089.1	1176.1	1266.5
19	772.1	845.5	922.4	1002.6	1086.2	1173.1	1263.4
20	770.9	844.3	921.1	1001.3	1084.8	1171.7	1261.9
21	768.1	841.2	918.0	997.8	1081.0	1167.6	1257.6
22	764.7	837.5	914.0	993.5	1076.4	1162.7	1252.4
23	764.0	836.8	913.2	992.7	1075.6	1161.8	1251.5
24	763.7	836.5	912.9	992.3	1075.2	1161.4	1251.1
25	763.1	835.8	912.2	991.6	1074.4	1160.6	1250.2

TABLE 7(b) (CONTINUED)

CONFIG	Z=23	Z=24	Z=25	Z=26	Z=27	Z=28	Z=29
26	761.3	833.5	909.0	987.8	1069.9	1155.3	1243.9
27	760.9	833.1	908.6	987.3	1069.4	1154.7	1243.4
28	760.7	832.9	908.4	987.1	1069.2	1154.5	1243.1
29	760.3	832.4	907.7	986.3	1068.2	1153.2	1241.7
30	759.6	831.6	906.9	985.4	1067.3	1152.4	1240.8
31	759.2	831.2	906.4	985.0	1066.8	1151.9	1240.2
32	758.7	830.7	905.5	984.4	1066.3	1151.8	1238.3
33	756.4	828.3	904.5	982.3	1063.4	1147.6	1236.1
34	754.3	826.5	899.9	977.5	1058.3	1142.3	1229.6
35	752.9	824.0	898.3	975.9	1056.6	1140.6	1227.8
36*	747.3	818.2	891.7	968.4	1048.2	1131.2	1217.4
37	746.4	816.7	890.1	966.7	1046.5	1129.5	1215.6
38	745.6	816.9	889.3	965.8	1045.6	1128.5	1214.6
39	745.3	816.5	888.9	965.4	1045.2	1128.1	1214.1
40	743.5	813.4	886.4	962.6	1041.9	1124.4	1210.0
41	743.2	813.7	885.7	961.9	1041.2	1123.7	1209.3
42	742.4	813.2	885.2	961.4	1040.6	1123.0	1208.6
43	742.2	813.0	885.0	961.1	1040.4	1122.8	1208.4
44*	741.7	812.8	884.6	960.0	1039.9	1121.1	1206.8
45	741.1	810.5	883.5	959.6	1038.9	1120.7	1205.9
46	740.7	810.4	883.0	959.0	1037.9	1120.2	1205.5
47*	739.8	812.5	881.7	960.9	1034.7	1121.5	1202.8
48	780.2	865.0	944.3	1027.1	1113.3	1203.1	1296.4
49	757.4	824.5	898.8	976.5	1057.3	1141.3	1228.5
50	769.3	842.5	919.3	999.4	1082.8	1169.6	1259.7

TABLE 7(b) (CONTINUED)

CONFIG	Z=23	Z=24	Z=25	Z=26	Z=27	Z=28	Z=29
51	747.9	818.7	892.7	970.0	1050.6	1134.3	1221.2
52	750.3	821.3	895.4	972.8	1053.4	1137.3	1224.3
53	766.9	840.1	916.7	996.6	1079.9	1166.6	1256.6
54	745.8	816.5	890.4	967.5	1047.9	1131.5	1218.3
55	749.0	819.9	894.0	971.4	1051.9	1135.7	1222.7
56	765.8	838.0	915.5	995.4	1078.6	1165.2	1255.2
57	744.7	815.3	889.2	966.3	1046.6	1130.1	1216.9
58*	743.0	814.0	887.3	963.8	1043.5	1126.3	1212.2
59	761.1	833.5	909.2	988.3	1070.6	1156.3	1245.3
60	739.4	809.8	882.3	958.6	1038.0	1120.5	1206.3
61	742.5	812.5	885.8	962.2	1041.8	1124.5	1210.5
62	759.6	832.0	907.7	986.6	1068.9	1154.5	1243.4
63	739.1	807.9	880.9	957.1	1036.4	1118.9	1204.6
64	741.8	811.9	885.0	961.4	1040.9	1123.7	1209.5
65	758.0	831.3	906.9	985.9	1068.1	1153.7	1242.6
66	737.5	807.2	880.2	956.3	1035.6	1118.1	1203.7
67	741.5	811.5	884.7	961.0	1040.5	1123.2	1209.1
68	758.7	831.0	906.6	985.5	1067.7	1153.3	1242.1
69	737.1	806.9	879.8	955.9	1035.2	1117.6	1203.2
70	738.7	808.4	882.2	958.2	1037.3	1119.6	1205.0
71	757.1	828.0	904.3	982.9	1064.7	1149.9	1238.3
72	735.7	804.3	877.4	953.1	1032.0	1114.0	1199.2
73	739.1	808.7	881.5	957.5	1036.5	1118.8	1204.2
74	756.3	827.9	903.5	982.0	1063.8	1148.9	1237.3
75	736.8	804.0	876.6	952.4	1031.2	1113.1	1198.4

TABLE 7(b) (CONTINUED)

CONFIG	Z=23	Z=24	Z=25	Z=26	Z=27	Z=28	Z=29
76	728.5	803.2	881.0	956.9	1036.0	1118.2	1203.6
77	749.0	827.8	903.0	981.5	1058.3	1148.4	1236.8
78	734.3	805.7	876.2	951.9	1030.7	1112.7	1197.8
79	728.4	804.1	880.8	956.7	1035.8	1118.0	1203.4
80	748.7	827.6	902.8	981.3	1063.1	1148.2	1236.5
81	734.1	803.5	876.0	951.7	1030.5	1112.5	1197.6
82*	737.6	807.3	880.5	956.1	1034.9	1116.7	1201.8
83	748.4	827.2	902.4	980.6	1062.1	1147.2	1235.1
84	733.6	803.1	875.3	950.8	1029.6	1110.8	1195.8
85	737.2	806.8	879.5	955.0	1034.1	1115.8	1200.7
86	748.6	826.4	901.3	979.6	1061.2	1146.0	1234.1
87	732.7	802.0	874.2	950.2	1028.7	1110.3	1195.2
88	736.0	805.3	878.8	954.5	1033.3	1115.3	1200.5
89	748.2	825.0	900.9	979.2	1060.7	1145.5	1233.6
90	732.5	801.8	874.0	949.5	1028.0	1109.7	1194.7
91*	737.0	806.4	878.9	953.3	1036.0	1117.4	1196.3
92	748.5	825.5	900.9	979.8	1060.4	1145.5	1232.6
93	735.2	804.0	877.8	950.2	1027.8	1109.8	1191.7

TABLE 7(b) (CONTINUED)

CONFIG	Z=30	Z=31	Z=32	Z=33	Z=34	Z=35	Z=36
1	1408.4	1509.3	1613.7	1721.6	1833.0	1947.8	2066.2
2	1366.7	1464.1	1564.8	1668.9	1776.4	1887.3	2001.4
3	1363.4	1460.7	1561.3	1665.3	1772.6	1883.3	1997.4
4	1361.7	1458.9	1559.5	1663.4	1770.7	1881.3	1995.4
5	1350.7	1446.8	1546.3	1649.0	1755.1	1864.5	1977.1
6	1348.8	1444.9	1544.2	1646.9	1752.9	1862.2	1974.8
7	1347.8	1443.8	1543.1	1645.8	1751.7	1861.0	1973.5
8	1347.4	1443.3	1542.6	1645.3	1751.2	1860.4	1973.0
9	1343.1	1438.6	1537.4	1639.5	1744.9	1853.6	1965.5
10	1342.0	1437.5	1536.3	1638.4	1743.7	1852.3	1964.3
11	1341.4	1436.9	1535.6	1637.7	1743.0	1851.6	1963.5
12	1341.2	1436.5	1535.4	1637.4	1742.7	1851.3	1963.2
13	1339.5	1434.9	1533.7	1635.8	1740.0	1848.5	1960.1
14	1339.5	1433.8	1532.2	1634.0	1738.8	1847.3	1958.7
15	1339.0	1433.1	1531.6	1633.3	1738.3	1846.5	1958.1
16	1337.8	1432.3	1533.0	1635.0	1737.2	1845.7	1957.2
17	1401.2	1501.8	1605.9	1713.5	1824.6	1939.2	2057.3
18	1360.3	1457.5	1558.0	1661.8	1769.0	1879.6	1993.6
19	1357.1	1454.1	1554.4	1658.2	1765.3	1875.7	1989.6
20	1356.5	1453.5	1553.8	1656.5	1763.5	1873.9	1987.7
21	1344.5	1440.4	1539.6	1642.1	1747.9	1857.0	1969.5
22	1342.6	1438.4	1537.5	1640.0	1745.7	1854.8	1967.1
23	1341.6	1437.4	1536.5	1638.9	1744.6	1853.6	1965.9
24	1341.2	1436.9	1536.0	1638.4	1744.0	1853.0	1965.3
25	1338.9	1434.4	1533.8	1636.6	1737.8	1846.2	1958.0

TABLE 7(b) (CONTINUED)

CONFIG	Z=30	Z=31	Z=32	Z=33	Z=34	Z=35	Z=36
26	1335.9	1431.1	1529.7	1631.5	1736.6	1845.0	1956.7
27	1335.3	1430.5	1529.0	1630.8	1735.9	1844.3	1956.0
28	1335.1	1430.3	1528.8	1630.6	1735.6	1844.0	1955.7
29	1333.6	1428.4	1526.8	1628.0	1733.2	1841.2	1952.6
30	1332.4	1427.4	1525.6	1627.2	1731.9	1839.9	1951.2
31	1331.9	1426.8	1525.0	1626.5	1731.2	1839.3	1950.5
32	1331.0	1426.1	1524.3	1625.7	1729.6	1838.3	1949.4
33	1325.9	1419.6	1517.0	1617.3	1721.0	1827.8	1937.8
34	1320.1	1413.3	1510.8	1610.9	1714.3	1820.9	1930.7
35	1319.3	1411.9	1508.8	1608.9	1712.2	1818.8	1928.5
36*	1306.9	1398.4	1495.1	1594.0	1696.0	1801.2	1909.6
37	1304.9	1397.4	1493.1	1591.9	1693.9	1799.0	1907.4
38	1303.9	1396.3	1491.9	1590.7	1692.6	1797.8	1906.1
39	1303.4	1395.8	1491.4	1590.1	1692.1	1797.2	1905.5
40	1298.8	1390.5	1485.9	1584.1	1685.5	1790.0	1897.7
41	1298.0	1390.0	1485.0	1583.2	1684.5	1789.1	1896.8
42	1297.4	1389.2	1484.3	1582.5	1683.8	1788.3	1895.9
43	1297.1	1389.0	1484.0	1582.2	1683.5	1788.0	1895.6
44*	1295.0	1386.7	1481.8	1580.3	1680.5	1784.9	1893.0
45	1294.4	1386.3	1480.8	1578.9	1679.5	1783.8	1891.2
46	1293.8	1385.4	1480.2	1578.1	1679.1	1783.1	1890.4
47*	1291.2	1383.5	1479.3	1581.1	1675.9	1784.4	1889.2
48	1307.8	1402.5	1497.3	1704.6	1815.4	1929.7	2047.4
49	1310.0	1402.7	1509.6	1609.7	1713.1	1819.6	1929.4
50	1353.2	1450.1	1550.3	1653.9	1760.8	1871.2	1984.8

TABLE 7(b) (CONTINUED)

CONFIG	Z=30	Z=31	Z=32	Z=33	Z=34	Z=35	Z=36
51	1311.4	1404.9	1501.4	1601.2	1704.3	1810.6	1920.1
52	1314.6	1408.1	1504.9	1604.7	1707.9	1814.3	1923.9
53	1350.0	1446.7	1546.8	1650.2	1757.1	1867.2	1980.8
54	1308.3	1401.6	1498.0	1597.7	1700.6	1805.8	1916.1
55	1312.9	1406.4	1503.1	1602.9	1705.1	1812.4	1921.9
56	1348.5	1445.2	1545.3	1648.7	1755.3	1865.6	1979.1
57	1306.9	1400.1	1496.5	1596.2	1699.0	1805.1	1914.4
58*	1301.4	1393.3	1489.3	1587.9	1689.8	1794.8	1903.0
59	1337.6	1433.2	1532.1	1634.3	1739.9	1848.7	1960.9
60	1295.2	1387.3	1482.5	1581.0	1682.6	1787.4	1895.3
61	1299.5	1391.3	1487.3	1585.9	1687.7	1792.6	1900.8
62	1335.6	1431.2	1530.0	1632.2	1737.7	1846.4	1958.5
63	1293.4	1385.4	1480.7	1579.0	1680.6	1785.3	1893.2
64	1298.6	1390.8	1486.2	1584.8	1686.5	1791.5	1899.6
65	1334.7	1430.2	1529.0	1631.2	1736.6	1845.3	1957.4
66	1292.6	1384.5	1479.7	1578.0	1679.6	1784.2	1892.1
67	1298.1	1390.3	1485.7	1584.2	1685.9	1790.9	1898.9
68	1334.3	1429.7	1528.5	1630.6	1736.0	1844.8	1956.8
69	1292.0	1384.0	1479.1	1577.5	1678.9	1783.6	1891.4
70	1293.6	1385.3	1480.2	1578.2	1679.4	1783.7	1891.2
71	1330.0	1425.0	1523.3	1624.9	1729.8	1838.0	1949.5
72	1287.5	1379.1	1473.7	1571.5	1672.5	1776.6	1883.8
73	1292.7	1384.5	1479.3	1577.3	1678.5	1782.7	1890.2
74	1329.0	1424.0	1522.2	1623.8	1728.6	1836.8	1948.2
75	1286.7	1378.1	1472.7	1570.5	1671.4	1775.5	1882.7

TABLE 7(b) (CONCLUDED)

CONFIG	Z=30	Z=31	Z=32	Z=33	Z=34	Z=35	Z=36
76	1292.1	1383.3	1473.6	1576.6	1677.7	1782.0	1889.4
77	1328.4	1423.4	1521.6	1623.1	1728.0	1836.1	1947.5
78	1286.1	1377.6	1472.1	1569.9	1670.8	1774.8	1882.0
79	1291.9	1383.5	1478.3	1576.3	1677.4	1781.7	1889.1
80	1328.2	1423.1	1521.3	1622.9	1727.7	1835.8	1947.2
81	1285.9	1377.3	1471.9	1569.6	1670.5	1774.5	1881.7
82*	1290.0	1381.7	1476.7	1573.6	1674.5	1778.8	1886.2
83	1326.6	1421.4	1519.4	1620.5	1725.2	1832.9	1944.2
84	1284.7	1375.6	1469.5	1566.7	1667.5	1771.1	1879.2
85	1289.1	1380.7	1475.0	1572.7	1673.5	1777.8	1884.8
86	1325.5	1420.2	1518.2	1619.4	1723.8	1831.6	1942.6
87	1283.2	1374.3	1469.7	1566.2	1666.7	1770.6	1877.3
88	1288.7	1380.0	1474.4	1572.2	1673.0	1776.9	1884.0
89	1325.0	1419.7	1517.6	1618.8	1723.3	1831.1	1942.1
90	1282.8	1373.3	1468.1	1565.5	1666.1	1769.8	1876.6
91*	1286.7	1379.5	1473.4	1574.4	1676.8	1774.6	1884.2
92	1324.3	1417.8	1517.3	1616.1	1721.3	1830.6	1940.0
93	1284.9	1375.3	1465.6	1565.2	1665.3	1767.6	1878.6

TABLE 8(a)–CONFIGURATION LIST FOR 9 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S	2S	2P	3S	3P	3D	4S	4P	4D	4F	5S	5P	5D	5F	6S	6P	6D	7S
GROUND CONFIGURATION																			
1	ODD	2	2	5															
ONE-ELECTRON EXCITED CONFIGURATIONS																			
2		2	2	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	ODD	2	2	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
4		2	2	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5		2	2	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6	ODD	2	2	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
7		2	2	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
8	ODD	2	2	4	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
9		2	2	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
10	ODD	2	2	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
11		2	2	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
12	ODD	2	2	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
13		2	2	4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
14	ODD	2	2	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
15		2	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16		2	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
17		2	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	ODD	2	1	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19		2	1	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
20	ODD	2	1	5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
21	ODD	2	1	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
22		2	1	5	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
23	ODD	2	1	5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
24		2	1	5	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
25	ODD	2	1	5	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
26		2	1	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
27	ODD	2	1	5	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
28		2	1	5	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
29	ODD	2	1	5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
30		2	1	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
31	ODD	2	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
32	ODD	2	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TWO-ELECTRON EXCITED CONFIGURATIONS																			
33	ODD	2	2	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34		2	2	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
35	ODD	2	2	3	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
36	ODD	2	2	3	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
37		2	2	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
38	ODD	2	2	3	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
39		2	2	3	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
40	ODD	2	2	3	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
41		2	2	3	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
42	ODD	2	2	3	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
43		2	2	3	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
44	ODD	2	2	3	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
45		2	2	3	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
46	ODD	2	2	3	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
47	ODD	2	2	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1

TABLE 8(a) (CONCLUDED)

43		2	0	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	ODD	2	0	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	ODD	2	1	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
53	ODD	2	0	6	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
57		2	0	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
54		2	1	4	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
55		2	0	6	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
56	ODD	2	0	5	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
57		2	1	4	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
58		2	0	6	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
59	ODD	2	0	5	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
60	ODD	2	1	4	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
61	ODD	2	0	6	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
62		2	0	5	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
63		2	1	4	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
64		2	0	6	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
65	ODD	2	0	5	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
66	ODD	2	1	4	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
67	ODD	2	0	6	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
68		2	0	5	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
69		2	1	4	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
70		2	0	6	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
71	ODD	2	0	5	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
72	ODD	2	1	4	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
73	ODD	2	0	6	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
74		2	0	5	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
75		2	1	4	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
76		2	0	6	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
77	ODD	2	0	5	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
78	ODD	2	1	4	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
79	ODD	2	0	6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
80		2	0	5	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
81		2	1	4	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
82		2	0	6	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
83	ODD	2	0	5	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
84	ODD	2	1	4	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
85	ODD	2	0	6	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
86		2	0	5	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
87		2	1	4	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
88		2	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
89	ODD	2	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
90		2	1	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
91		2	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
92	ODD	2	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1

TABLE 8(b)–9 ELECTRONS

CONFIG	Z=18	Z=19	Z=20	Z=21	Z=22	Z=23	Z=24
1	488.0	550.0	615.7	685.2	758.5	835.5	916.2
2	478.5	538.8	602.7	670.2	741.3	816.0	894.4
3	476.8	536.9	600.7	668.0	739.0	813.6	891.8
4	475.8	535.9	599.5	666.8	737.7	812.2	890.3
5	474.6	534.2	597.3	664.1	734.4	808.3	885.7
6	473.5	533.0	596.1	662.8	733.0	806.8	884.2
7	473.0	532.5	595.6	662.2	732.4	806.1	883.4
8	472.9	532.3	595.3	661.9	732.1	805.8	883.1
9	472.6	531.9	594.7	661.1	731.0	804.5	881.5
10	472.0	531.3	594.1	660.4	730.3	803.7	880.7
11	471.7	531.0	593.7	660.1	729.9	803.3	880.2
12	471.6	530.9	593.6	659.9	729.8	803.2	880.1
13	472.0	530.9	593.7	660.1	729.6	802.9	879.9
14	471.3	530.4	593.2	659.3	729.0	802.1	878.9
15	471.0	530.2	592.7	658.9	728.6	801.8	878.5
16	468.1	532.6	592.6	657.1	730.6	801.4	878.6
17	483.8	545.5	616.9	680.1	753.1	829.8	910.2
18	474.8	534.8	598.4	665.6	736.5	810.9	889.0
19	473.1	533.0	596.4	663.5	734.2	808.5	886.4
20	472.1	531.9	595.3	662.4	733.0	807.2	885.1
21	470.9	530.2	593.1	659.6	729.6	803.2	880.4
22	469.9	529.1	592.0	658.3	728.3	801.8	878.9
23	469.4	528.6	591.4	657.8	727.7	801.1	878.2
24	469.2	528.4	591.2	657.5	727.4	800.8	877.8
25	469.0	528.0	590.6	656.7	726.3	799.5	876.3

TABLE 8(b) (CONTINUED)

CONFIG	Z=18	Z=19	Z=20	Z=21	Z=22	Z=23	Z=24
26	468.4	527.4	589.9	656.0	725.5	798.8	875.4
27	468.1	527.1	589.6	655.8	725.2	798.4	875.0
28	468.0	527.0	589.5	655.5	725.1	798.2	874.8
29	468.5	527.4	589.8	655.6	724.9	798.1	874.5
30	467.7	526.6	588.7	654.8	724.3	797.3	873.8
31	467.4	526.3	588.6	654.5	723.9	796.8	873.3
32	466.9	526.0	588.9	654.0	724.7	796.6	872.5
33	469.5	528.1	590.2	655.7	724.8	797.3	873.2
34	466.6	525.0	586.8	652.1	720.8	793.1	868.8
35	465.4	523.7	585.4	650.6	719.3	791.5	867.1
36*	464.2	522.9	583.2	647.9	715.9	787.4	862.4
37	463.6	522.7	581.9	646.5	714.5	785.9	860.8
38	462.4	521.1	581.2	645.7	713.7	785.1	859.9
39	462.2	519.9	580.9	645.4	713.4	784.7	359.5
40	461.8	519.3	580.2	644.5	712.2	783.3	857.8
41	461.5	518.9	579.8	644.0	711.7	782.8	857.2
42	461.1	518.5	579.3	643.5	711.2	782.2	856.6
43	460.9	518.4	579.2	643.4	711.0	782.0	856.4
44*	461.8	518.9	579.3	643.3	711.0	781.7	856.3
45	461.0	518.3	578.6	642.8	710.5	781.1	855.1
46	460.4	517.5	578.3	642.4	709.9	780.7	854.8
47*	459.4	519.7	576.9	642.5	708.0	787.7	848.7
48	465.5	523.8	585.6	650.8	719.6	791.8	867.4
49	463.3	522.7	585.6	652.2	722.3	796.1	873.5
50	461.0	519.5	580.5	645.4	713.9	785.7	861.1

TABLE 8(b) (CONTINUED)

CONFIG	Z=18	Z=19	Z=20	Z=21	Z=22	Z=23	Z=24
51	463.3	521.4	583.0	648.0	716.6	788.5	864.0
52	462.4	521.6	584.4	650.8	720.9	794.3	871.8
53	459.6	517.4	578.7	643.5	711.7	783.5	858.6
54	462.2	520.2	581.7	646.7	715.2	787.1	862.5
55	461.2	520.4	583.2	649.6	719.7	793.3	870.4
56	458.7	516.4	577.7	642.4	710.6	782.3	857.4
57*	460.9	518.5	579.4	643.9	711.7	782.9	857.6
58	459.7	518.5	580.7	646.6	716.0	788.9	865.5
59	457.1	514.4	575.2	639.3	706.9	777.9	852.3
60	459.8	517.3	578.2	642.5	710.3	781.5	856.1
61	459.2	517.8	580.1	645.9	715.2	788.1	864.6
62	456.1	513.3	574.0	638.1	705.6	776.5	850.8
63	459.2	516.7	577.5	641.8	709.6	780.7	855.3
64	459.6	517.2	579.3	645.1	714.4	787.3	863.7
65	455.7	512.9	573.5	637.5	705.0	775.8	850.1
66	459.0	516.4	577.3	641.5	709.2	780.4	854.9
67	458.5	517.1	579.2	644.9	714.1	787.0	863.3
68	455.5	512.6	573.2	637.2	704.6	775.5	849.7
69	458.7	516.9	576.6	640.6	708.1	778.9	853.2
70	458.0	516.4	578.4	643.8	712.9	785.4	861.6
71	455.2	512.1	572.5	636.3	703.5	774.1	848.1
72	458.2	515.5	576.1	640.1	707.5	778.3	852.6
73	457.7	516.1	578.0	643.5	712.5	785.0	861.1
74	454.7	511.6	571.9	635.6	702.8	773.4	847.3
75	457.9	515.1	575.7	639.7	707.1	777.8	852.0

TABLE 8(b) (CONTINUED)

CONFIG	Z=18	Z=19	Z=20	Z=21	Z=22	Z=23	Z=24
76	457.4	513.8	577.7	643.1	712.1	784.6	860.6
77	454.4	511.3	571.6	635.3	702.5	773.0	846.9
78	457.8	515.0	575.5	639.5	706.9	777.7	851.8
79	457.4	513.7	577.6	643.0	711.9	784.4	860.5
80	454.3	511.2	571.5	635.2	702.3	772.8	846.7
81*	458.8	515.7	575.7	639.4	706.9	777.6	851.3
82	457.1	513.3	577.1	642.4	711.2	783.6	859.5
83	454.6	511.6	571.9	634.9	702.3	772.1	846.2
84	457.6	514.4	574.9	638.9	706.2	776.8	850.6
85	456.9	513.2	576.9	642.2	711.0	783.4	859.3
86	454.1	511.6	570.9	634.4	701.7	771.8	845.3
87	457.3	514.2	574.7	638.4	705.9	776.3	850.3
88	456.9	515.6	576.7	642.0	710.8	783.1	859.0
89	453.7	510.4	570.7	634.3	701.2	771.4	845.2
90*	456.4	517.8	570.9	641.4	705.7	780.7	849.9
91	456.6	514.7	576.4	641.6	710.3	782.6	858.3
92	452.1	513.5	568.6	637.4	701.6	770.9	843.2

TABLE 8(b) (CONTINUED)

CONFIG	Z=25	Z=26	Z=27	Z=28	Z=29	Z=30	Z=31
1	1660.7	1689.0	1181.6	1276.7	1376.2	1479.5	1586.5
2	976.3	1061.9	1151.0	1243.8	1340.2	1440.1	1543.7
3	973.6	1059.0	1148.0	1240.6	1336.9	1436.7	1540.2
4	972.1	1057.4	1146.4	1238.9	1335.1	1434.9	1538.3
5	966.7	1051.2	1139.4	1231.0	1326.3	1425.1	1527.4
6	965.1	1049.6	1137.6	1229.2	1324.4	1423.1	1525.4
7	964.3	1048.7	1136.7	1228.3	1323.4	1422.1	1524.3
8	963.9	1048.3	1136.3	1227.8	1322.9	1421.6	1523.8
9	962.0	1046.1	1133.7	1224.9	1319.6	1417.8	1519.6
10	961.2	1045.3	1132.8	1224.0	1318.6	1416.8	1518.6
11	960.7	1044.7	1132.3	1223.4	1318.0	1416.2	1517.9
12	960.5	1044.5	1132.1	1223.2	1317.8	1415.9	1517.6
13	959.9	1044.1	1131.4	1222.4	1316.3	1414.5	1516.3
14	959.4	1043.1	1130.5	1221.3	1315.6	1413.5	1515.0
15	958.8	1042.6	1129.9	1220.7	1315.2	1413.0	1514.5
16	959.4	1044.9	1133.0	1219.1	1319.1	1411.9	1516.2
17	994.4	1082.3	1174.0	1269.5	1368.7	1471.6	1578.3
18	970.6	1055.9	1144.8	1237.3	1333.4	1433.1	1536.4
19	967.9	1053.0	1141.8	1234.1	1330.1	1429.7	1532.9
20	966.5	1051.6	1140.3	1232.6	1328.5	1428.6	1531.1
21	961.1	1045.4	1133.2	1224.7	1319.6	1418.2	1520.2
22	959.5	1043.8	1131.5	1222.8	1317.7	1416.2	1518.2
23	958.8	1042.9	1130.7	1221.9	1316.8	1415.2	1517.2
24	958.4	1042.5	1130.2	1221.5	1316.3	1414.7	1516.7
25	956.5	1040.3	1127.7	1218.6	1313.0	1411.0	1512.5

TABLE 8(b) (CONTINUED)

CONFIG	Z=25	Z=26	Z=27	Z=28	Z=29	Z=30	Z=31
26	955.7	1039.5	1126.8	1217.6	1312.0	1410.0	1511.4
27	955.2	1039.0	1126.3	1217.1	1311.5	1409.4	1510.8
28	955.0	1038.8	1126.0	1216.9	1311.2	1409.1	1510.5
29	954.5	1038.4	1125.2	1216.1	1309.9	1407.9	1509.2
30	953.8	1037.3	1124.3	1215.0	1309.1	1406.5	1507.9
31	953.3	1036.8	1123.9	1214.4	1308.6	1406.2	1507.4
32	954.6	1034.5	1125.9	1212.7	1310.2	1405.5	1507.0
33	952.7	1035.6	1121.9	1211.8	1305.1	1401.9	1502.1
34	948.0	1030.6	1116.7	1206.3	1299.4	1395.9	1495.9
35	946.3	1028.8	1114.9	1204.4	1297.4	1393.9	1493.8
36*	945.7	1022.5	1107.6	1196.2	1288.3	1383.7	1482.6
37	939.6	1020.7	1105.9	1194.4	1286.3	1381.7	1480.5
38	938.1	1019.8	1104.8	1193.3	1285.2	1380.6	1479.3
39	937.7	1019.3	1104.4	1192.8	1284.7	1380.0	1478.8
40	935.7	1017.0	1101.6	1189.7	1281.2	1376.1	1474.4
41	935.1	1016.3	1101.0	1189.0	1280.5	1375.4	1473.6
42	934.5	1015.7	1100.3	1188.3	1279.8	1374.6	1472.8
43	934.3	1015.5	1100.1	1188.1	1279.5	1374.3	1472.5
44*	934.1	1014.9	1099.3	1186.9	1278.1	1374.1	1470.4
45	933.1	1014.0	1098.7	1186.6	1277.5	1371.7	1470.4
46	932.6	1013.4	1097.9	1185.6	1276.9	1371.5	1469.3
47*	931.1	1013.5	1097.2	1183.0	1282.4	1373.0	1473.4
48	946.6	1029.2	1115.3	1204.8	1297.9	1394.4	1494.3
49	954.5	1039.1	1127.4	1219.2	1314.6	1413.7	1516.3
50	939.9	1022.2	1108.0	1197.2	1289.9	1386.1	1485.8

TABLE 8(b) (CONTINUED)

CONFIG	Z=25	Z=26	Z=27	Z=28	Z=29	Z=30	Z=31
51	942.9	1025.3	1111.2	1200.6	1293.4	1389.6	1489.4
52	952.8	1037.1	1125.2	1216.9	1312.2	1411.1	1513.7
53	937.3	1019.4	1105.6	1194.1	1286.6	1382.6	1482.1
54	941.4	1023.7	1109.5	1198.8	1291.6	1387.8	1487.5
55	951.1	1035.5	1123.4	1215.0	1310.2	1409.0	1511.4
56	936.0	1018.1	1103.6	1192.6	1285.1	1381.1	1480.5
57*	935.7	1017.3	1102.2	1190.6	1282.4	1377.6	1476.2
58	945.6	1029.2	1116.4	1207.2	1301.5	1399.5	1500.9
59	930.1	1011.4	1096.6	1184.1	1275.6	1370.6	1469.0
60	934.1	1015.6	1100.4	1188.7	1280.5	1375.6	1474.2
61	944.7	1028.3	1115.4	1206.2	1300.5	1398.3	1499.7
62	928.6	1009.8	1094.4	1182.4	1273.8	1368.7	1467.0
63	933.3	1014.7	1099.5	1187.8	1279.5	1374.6	1473.1
64	943.7	1027.2	1114.3	1205.0	1299.3	1397.1	1498.4
65	927.9	1009.5	1093.6	1181.6	1273.0	1367.8	1466.1
66	932.9	1014.2	1099.1	1187.3	1278.9	1374.0	1472.5
67	943.3	1026.8	1113.9	1204.5	1298.7	1396.4	1497.8
68	927.4	1008.6	1093.1	1181.0	1272.4	1367.2	1465.5
69	937.8	1020.9	1106.3	1194.2	1286.4	1382.1	1482.1
70	941.2	1024.4	1111.1	1201.4	1295.2	1392.5	1493.4
71	925.4	1006.2	1090.4	1178.0	1269.0	1363.3	1461.1
72	930.2	1011.2	1095.6	1183.4	1274.7	1369.3	1467.2
73	940.7	1023.9	1110.6	1200.8	1294.6	1391.9	1492.8
74	924.7	1005.4	1089.6	1177.1	1268.1	1362.4	1460.1
75	929.6	1010.6	1095.3	1182.8	1274.0	1368.6	1466.6

TABLE 8(b) (CONTINUED)

CONFIG	Z=25	Z=26	Z=27	Z=28	Z=29	Z=30	Z=31
76	940.2	1023.4	1110.0	1200.3	1294.0	1391.3	1492.1
77	924.3	1005.0	1089.1	1176.6	1267.5	1361.9	1459.8
78	929.4	1010.4	1094.8	1182.6	1273.7	1368.3	1466.3
79	940.0	1023.1	1109.8	1200.0	1293.7	1391.0	1491.8
80	924.0	1004.7	1088.9	1176.4	1267.3	1361.6	1459.3
81*	929.8	1010.5	1093.9	1181.8	1272.4	1367.8	1464.0
82	938.9	1021.8	1108.3	1198.3	1291.8	1388.9	1489.5
83	923.9	1004.3	1087.6	1173.4	1265.9	1359.8	1457.8
84	928.1	1008.9	1093.3	1181.0	1271.9	1365.7	1464.1
85	939.7	1021.6	1108.0	1198.0	1291.5	1388.6	1489.1
86	922.9	1003.2	1087.0	1174.7	1265.1	1358.9	1456.3
87	927.7	1008.5	1092.7	1180.1	1271.1	1365.4	1463.1
88	938.4	1021.3	1107.7	1197.7	1291.2	1388.2	1488.7
89	922.4	1002.7	1086.7	1173.9	1264.6	1358.7	1456.1
90*	924.8	1008.4	1092.8	1179.1	1272.8	1361.4	1460.4
91	937.6	1020.4	1106.7	1196.5	1289.9	1386.8	1487.2
92	921.8	1003.2	1085.9	1172.2	1266.4	1360.0	1452.9

TABLE 8(b) (CONTINUED)

CONFIG	Z=32	Z=33	Z=34	Z=35	Z=36	Z=37	Z=38
1	1697.2	1811.7	1939.1	2052.0	2177.7	2307.2	2440.5
2	1651.0	1761.8	1876.2	1994.3	2115.9	2241.2	2370.1
3	1647.2	1757.9	1872.2	1990.1	2111.7	2236.8	2365.5
4	1645.3	1755.9	1870.2	1988.0	2109.5	2234.5	2363.2
5	1633.4	1742.9	1855.9	1972.5	2092.7	2216.5	2343.8
6	1631.2	1740.7	1853.6	1970.2	2090.3	2213.9	2341.2
7	1630.1	1739.5	1852.4	1968.9	2089.0	2212.6	2339.8
8	1629.6	1738.9	1851.8	1968.3	2088.3	2211.9	2339.1
9	1624.9	1733.8	1846.2	1962.1	2081.6	2204.6	2331.2
10	1623.9	1732.7	1845.1	1960.9	2080.4	2203.4	2329.9
11	1623.2	1732.0	1844.3	1960.2	2079.6	2202.5	2329.0
12	1622.9	1731.7	1844.0	1959.8	2079.3	2202.2	2328.7
13	1620.9	1729.6	1841.7	1957.3	2076.2	2199.5	2325.6
14	1620.2	1728.6	1840.5	1956.0	2075.3	2197.8	2324.0
15	1619.4	1727.9	1839.9	1955.5	2074.5	2197.1	2323.3
16	1618.5	1723.0	1837.9	1953.8	2073.2	2195.4	2322.7
17	1668.7	1662.9	1920.9	2042.5	2168.0	2297.2	2430.1
18	1643.3	1753.9	1868.0	1985.8	2107.2	2232.2	2360.8
19	1639.7	1750.1	1864.1	1981.7	2103.0	2227.8	2356.3
20	1637.9	1748.2	1862.2	1979.8	2100.9	2225.7	2354.1
21	1625.9	1735.1	1847.9	1964.3	2084.2	2207.6	2334.6
22	1623.8	1732.9	1845.6	1961.9	2081.7	2205.1	2332.1
23	1622.7	1731.8	1844.5	1960.7	2080.5	2203.8	2330.7
24	1622.2	1731.2	1843.9	1960.1	2079.8	2203.2	2330.0
25	1617.6	1726.1	1838.3	1953.9	2073.2	2195.9	2322.2

TABLE 8(b) (CONTINUED)

CONFIG	Z=32	Z=33	Z=34	Z=35	Z=36	Z=37	Z=38
26	1610.5	1725.0	1837.1	1952.7	2071.9	2194.7	2320.9
27	1615.8	1724.3	1836.4	1952.0	2071.1	2193.8	2320.0
28	1615.5	1724.0	1836.1	1951.7	2070.8	2193.5	2319.7
29	1613.8	1722.2	1833.8	1949.3	2068.1	2190.6	2316.6
30	1612.7	1721.0	1832.7	1948.0	2066.8	2189.0	2314.8
31	1612.0	1720.2	1832.0	1947.3	2066.1	2188.4	2314.3
32	1607.9	1721.6	1830.7	1947.4	2063.5	2186.7	2314.3
33	1605.8	1713.0	1823.7	1937.8	2055.5	2176.6	2301.1
34	1599.4	1706.3	1816.8	1930.7	2048.1	2168.9	2293.2
35	1597.2	1704.1	1814.5	1928.3	2045.6	2166.4	2290.6
36*	1584.9	1690.7	1799.8	1912.4	2028.4	2147.8	2270.7
37	1582.8	1689.4	1797.5	1910.0	2025.9	2145.3	2268.1
38	1581.5	1687.1	1795.2	1908.5	2024.5	2143.8	2266.6
39	1580.9	1686.5	1795.5	1908.0	2023.8	2143.1	2265.8
40	1576.1	1681.2	1789.7	1901.6	2016.9	2135.6	2257.7
41	1575.2	1680.3	1788.8	1900.7	2015.9	2134.6	2256.7
42	1574.5	1679.5	1787.9	1899.8	2015.0	2133.6	2255.7
43	1574.2	1679.2	1787.6	1899.4	2014.7	2133.3	2255.3
44*	1572.4	1676.9	1785.9	1896.1	2012.5	2130.3	2252.3
45	1571.1	1676.6	1784.0	1896.0	2010.7	2129.1	2250.5
46	1570.5	1675.4	1783.4	1895.0	2009.9	2128.3	2249.8
47*	1572.7	1677.1	1777.9	1895.6	2011.2	2130.6	2250.5
48	1607.8	1764.7	1815.1	1929.9	2045.2	2167.6	2291.3
49	1622.6	1732.5	1846.0	1963.1	2083.8	2208.1	2336.1
50	1589.9	1695.5	1805.5	1919.1	2036.1	2156.6	2280.5

TABLE 8(b) (CONTINUED)

CONFIG	Z=32	Z=33	Z=34	Z=35	Z=36	Z=37	Z=38
51	1592.6	1699.3	1809.5	1923.2	2040.3	2160.9	2284.9
52	1619.8	1729.6	1842.9	1959.9	2080.5	2204.7	2332.5
53	1585.1	1691.5	1801.4	1914.8	2031.6	2151.9	2275.7
54	1590.7	1697.3	1807.5	1921.0	2038.1	2158.6	2282.7
55	1617.4	1727.1	1840.3	1957.1	2077.6	2201.7	2329.4
56	1583.4	1689.8	1799.6	1912.9	2029.7	2150.0	2273.7
57*	1578.3	1683.9	1792.7	1905.0	2020.8	2139.9	2262.6
58	1605.0	1714.5	1826.7	1942.4	2061.6	2184.4	2310.8
59	1570.8	1676.0	1784.6	1896.7	2012.1	2131.0	2253.4
60	1576.2	1681.6	1790.4	1902.7	2018.4	2137.5	2260.0
61	1604.7	1713.3	1825.4	1941.0	2060.3	2183.1	2309.4
62	1568.7	1673.9	1782.4	1894.4	2009.8	2128.7	2251.0
63	1575.0	1680.4	1789.2	1901.4	2017.1	2136.1	2258.6
64	1603.4	1711.9	1823.9	1939.5	2058.7	2181.4	2307.7
65	1567.7	1672.9	1781.4	1893.3	2008.7	2127.5	2249.7
66	1574.4	1679.9	1788.5	1900.7	2016.3	2135.4	2257.9
67	1602.6	1711.1	1823.1	1938.7	2057.8	2180.5	2306.8
68	1567.1	1672.2	1780.7	1892.6	2008.0	2126.7	2248.9
69	1569.6	1674.5	1782.7	1894.4	2009.4	2127.9	2249.7
70	1597.9	1705.8	1817.3	1932.4	2051.0	2173.1	2298.8
71	1562.3	1666.9	1774.9	1886.3	2001.1	2119.2	2240.8
72	1568.6	1673.5	1781.7	1893.4	2008.4	2126.8	2248.7
73	1597.2	1705.1	1816.6	1931.6	2050.2	2172.3	2297.9
74	1561.3	1665.9	1773.8	1885.2	1999.9	2118.1	2239.7
75	1568.0	1672.8	1781.0	1892.6	2007.6	2126.0	2247.8

TABLE 8(b) (CONCLUDED)

CONFIG	Z=32	Z=33	Z=34	Z=35	Z=36	Z=37	Z=38
76	1596.5	1704.4	1815.9	1930.9	2049.4	2171.5	2297.1
77	1569.7	1665.2	1773.2	1884.5	1999.2	2117.4	2238.9
78	1567.7	1672.5	1780.6	1892.2	2007.2	2125.6	2247.4
79	1596.2	1704.1	1815.5	1930.5	2049.0	2171.1	2296.7
80	1569.4	1664.9	1772.8	1884.1	1998.9	2117.0	2238.5
81*	1565.7	1669.7	1778.2	1889.8	2004.4	2122.4	2244.6
82	1593.6	1701.2	1812.4	1927.1	2045.3	2167.0	2292.3
83	1559.2	1663.1	1771.0	1881.7	1996.5	2113.9	2235.8
84	1564.9	1669.7	1777.2	1888.6	2003.0	2121.3	2242.7
85	1593.2	1701.9	1812.6	1926.7	2044.9	2166.6	2291.9
86	1557.6	1661.8	1769.9	1880.3	1995.1	2112.6	2233.8
87	1564.1	1668.6	1776.6	1887.8	2002.5	2120.6	2241.9
88	1592.8	1700.4	1811.6	1926.2	2044.4	2166.1	2291.4
89	1556.8	1661.1	1768.6	1879.7	1994.2	2111.8	2233.1
90*	1563.1	1671.3	1771.4	1890.2	2003.1	2110.4	2239.8
91	1591.1	1698.5	1809.5	1924.0	2042.0	2163.5	2288.5
92	1558.3	1654.4	1765.6	1879.1	1991.0	2106.9	2232.3

TABLE 9(a)–CONFIGURATION LIST FOR 10 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S 2S 2P 3S 3P 3D 4S 4P 4D 4F 5S 5P 5D 5F 5G 6S 6P 6D 7S
GROUND CONFIGURATION		
1		2 2
ONE-ELECTRON EXCITED CONFIGURATIONS		
2		2 2 1
3		2 2 1
4		2 2 1
5		2 2 1
6		2 2 1
7		2 2 1
8		2 2 1
9		2 2 1
10		2 2 1
11		2 2 1
12		2 2 1
13		2 2 1
14		2 2 1
15		2 2 1
16		2 2 1
17		2 2 1
18		2 2 1
19		2 2 1
20		2 2 1
21		2 2 1
22		2 2 1
23		2 2 1
24		2 2 1
25		2 2 1
26		2 2 1
27		2 2 1
28		2 2 1
29		2 2 1
30		2 2 1
31		2 2 1
TWO-ELECTRON EXCITED CONFIGURATIONS		
32		2 2 2
33		2 2 2
34		2 2 2
35		2 2 2
36		2 2 2
37		2 2 2
38		2 2 2
39		2 2 2
40		2 2 2
41		2 2 2
42		2 2 2
43		2 2 2
44		2 2 2
45		2 2 2
46		2 2 2
47		2 2 2

TABLE 9(a) (CONCLUDED)

TABLE 9(b)–10 ELECTRONS

CONFIG	Z=20	Z=21	Z=22	Z=23	Z=24	Z=25	Z=26
1	627.6	710.1	776.5	857.2	941.7	1030.3	1122.8
2	625.1	696.1	771.5	849.8	932.4	1018.9	1109.2
3	623.0	693.9	768.7	847.3	929.7	1016.9	1106.2
4	621.9	692.7	767.3	845.9	923.3	1014.5	1104.6
5	620.3	690.6	764.7	842.7	924.4	1010.0	1099.3
6	619.1	689.3	767.4	841.2	922.9	1008.3	1097.6
7	618.5	688.7	762.7	840.5	922.1	1007.5	1096.8
8	618.3	688.5	762.4	840.2	921.8	1007.2	1096.4
9	617.9	687.9	761.7	839.2	926.5	1005.7	1094.6
10	617.3	687.2	760.9	839.4	919.7	1004.8	1093.7
11	617.0	686.9	760.6	839.0	919.3	1004.3	1093.2
12	616.9	686.7	761.4	837.9	919.1	1004.2	1093.0
13	617.1	686.9	760.8	837.9	919.1	1004.2	1092.4
14	616.3	686.3	759.8	837.0	918.3	1003.0	1091.9
15	616.2	685.8	759.4	836.7	917.8	1002.6	1091.3
16	618.6	686.1	761.3	835.9	918.1	1002.3	1091.2
17	620.4	691.2	765.8	844.2	926.5	1012.7	1102.7
18	618.4	689.1	763.4	841.7	923.9	1009.9	1099.7
19	617.3	687.9	762.2	840.4	922.5	1008.4	1098.2
20	615.7	685.7	759.5	837.2	918.6	1003.9	1092.9
21	614.5	684.4	758.2	835.7	917.1	1002.3	1091.3
22	614.0	683.8	757.5	835.0	916.4	1001.5	1090.4
23	617.7	683.6	757.3	834.7	916.3	1001.1	1090.0
24	613.4	683.1	756.5	833.8	914.8	999.6	1088.2
25	612.7	682.4	755.8	833.0	914.0	998.8	1087.4

TABLE 9(b) (CONTINUED)

CONFIG	Z=20	Z=21	Z=22	Z=23	Z=24	Z=25	Z=26
26	612.4	682.[illegible]	755.4	832.6	913.5	998.3	1086.9
27	612.3	681.9	755.3	832.4	913.4	998.1	1086.7
28	612.5	682.1	755.5	832.3	913.3	997.9	1086.2
29	611.8	681.4	754.7	831.6	912.5	997.0	1085.4
30	611.6	681.2	754.3	831.3	912.1	996.6	1085.0
31	612.0	681.4	753.7	830.6	912.6	997.4	1084.7
32	614.1	683.3	756.2	832.9	913.2	997.2	1085.0
33	614.7	679.6	752.2	828.6	908.6	992.4	1079.9
34	609.2	678.2	750.6	826.9	906.9	990.6	1078.0
35*	607.8	676.1	748.6	823.7	903.0	986.0	1072.7
36	606.4	674.6	746.5	822.1	901.4	984.3	1070.9
37	605.6	673.8	745.7	821.2	900.4	983.3	1069.9
38	605.4	673.5	745.3	820.9	900.0	982.9	1069.4
39	604.9	672.9	744.5	819.8	898.7	981.2	1067.5
40	604.5	672.4	744.1	819.3	898.1	980.7	1066.9
41	604.9	671.9	743.5	818.7	897.5	980.0	1066.2
42	603.9	671.8	743.3	818.5	897.3	979.8	1066.0
43*	604.6	672.1	743.7	818.7	897.7	980.3	1065.7
44	603.5	671.6	742.6	817.8	896.7	978.8	1064.8
45	603.1	671.9	742.2	817.4	896.6	978.3	1064.3
46*	603.2	672.4	741.9	817.2	896.2	976.0	1063.0
47	606.1	678.0	750.6	826.9	906.9	990.7	1078.2
48	603.7	676.2	744.5	820.4	900.1	983.5	1070.7
49	606.5	675.1	747.4	823.5	903.3	986.8	1074.1
50	594.4	662.4	734.1	809.6	888.7	971.6	1058.3

TABLE 9(b) (CONTINUED)

CONFIG	Z=20	Z=21	Z=22	Z=23	Z=24	Z=25	Z=26
51	575.1	673.7	746.3	822.0	891.7	985.1	1072.3
52	599.8	696.2	732.5	817.9	887.0	969.7	1056.2
53*	643.5	671.6	743.7	818.7	887.8	984.5	1066.9
54	594.7	659.1	729.9	804.0	882.4	964.5	1050.3
55	603.2	677.3	741.9	817.1	886.1	978.8	1065.1
56	589.7	657.6	728.3	802.8	881.1	963.2	1048.9
57	601.5	669.5	741.1	816.3	885.3	977.9	1064.2
58	591.4	655.7	726.7	801.3	879.5	961.6	1047.2
59	601.3	669.3	740.7	815.6	884.9	977.5	1063.7
60	583.1	655.3	726.2	801.7	879.6	960.9	1046.4
61	602.2	668.5	739.9	814.9	883.5	975.8	1061.8
62	584.1	655.3	725.9	801.2	878.2	959.9	1045.2
63	600.4	668.1	739.4	814.4	882.9	975.2	1061.1
64	587.4	654.4	725.5	799.4	877.3	958.9	1044.2
65	599.9	667.6	738.9	813.8	882.4	974.6	1060.5
66	586.5	653.5	724.3	798.4	876.3	957.9	1043.1
67	599.8	667.4	738.7	813.6	882.2	974.4	1061.3
68	586.4	653.3	723.9	798.1	875.9	957.4	1042.6
69*	600.1	667.7	738.5	813.4	882.1	974.3	1059.7
70	586.8	653.2	723.4	798.5	876.1	957.6	1042.1
71	599.4	667.3	738.1	812.9	881.5	973.6	1059.2
72	585.2	653.2	723.5	797.7	875.7	956.6	1041.8
73	598.3	666.6	737.7	812.5	881.0	972.8	1058.6
74	585.4	653.4	722.7	796.8	874.5	955.8	1040.8
75*	601.1	667.3	741.	817.4	882.9	973.2	1061.8

TABLE 9(b) (CONTINUED)

CONFIG	Z=20	Z=21	Z=22	Z=23	Z=24	Z=25	Z=26
75	587.7	65..4	726.2	794.5	381.3	956.3	1042.6

TABLE 9(b) (CONTINUED)

CONFIG	Z=27	Z=28	Z=29	Z=30	Z=31	Z=32	Z=33
1	1219.3	1319.9	1424.4	1533.6	1645.5	1762.1	1882.6
2	1223.4	1301.5	1403.4	1509.1	1618.8	1732.3	1849.6
3	1200.3	1298.2	1399.9	1505.6	1615.9	1728.4	1845.6
4	1199.6	1296.4	1398.1	1503.7	1613.1	1726.4	1843.5
5	1198.5	1295.5	1396.7	1495.2	1603.4	1715.6	1831.7
6	1196.7	1287.7	1388.4	1492.9	1601.3	1713.4	1829.4
7	1189.8	1286.7	1387.4	1491.9	1600.2	1712.3	1828.2
8	1189.4	1286.2	1386.9	1491.4	1599.6	1711.7	1827.6
9	1187.3	1283.8	1384.7	1488.1	1596.0	1707.6	1823.1
10	1186.3	1282.8	1383.1	1487.1	1594.9	1706.5	1822.0
11	1185.8	1282.3	1382.5	1486.5	1594.3	1705.9	1821.2
12	1185.6	1282.1	1382.2	1486.2	1594.0	1705.6	1820.9
13	1185.5	1281.3	1381.4	1485.3	1592.6	1704.1	1819.5
14	1184.1	1280.3	1380.3	1484.1	1591.5	1703.1	1818.1
15	1183.6	1279.8	1379.8	1483.6	1591.1	1702.5	1817.5
16	1181.8	1283.2	1380.8	1483.3	1591.8	1702.1	1813.1
17	1196.6	1294.7	1395.0	1501.4	1610.7	1723.9	1841.0
18	1193.5	1291.1	1392.5	1497.9	1607.0	1720.1	1837.0
19	1191.9	1290.4	1390.6	1496.1	1605.2	1718.2	1835.0
20	1185.8	1282.5	1383.0	1487.4	1595.5	1707.4	1823.2
21	1184.1	1280.7	1381.1	1485.3	1593.4	1705.3	1820.9
22	1183.2	1279.8	1380.1	1484.3	1592.3	1704.2	1819.8
23	1182.8	1279.3	1379.6	1483.8	1591.8	1703.6	1819.2
24	1180.6	1276.9	1376.9	1480.6	1588.2	1699.5	1814.7
25	1179.7	1275.9	1375.8	1479.6	1587.1	1698.4	1813.5

TABLE 9(b) (CONTINUED)

CONFIG	Z=27	Z=29	Z=29	Z=[illegible]	Z=31	Z=32	Z=33
26	1176.2	1275.3	1375.7	1479.0	1586.5	1697.7	1812.8
27	1179.[illegible]	1275.1	1375.0	1478.7	1586.2	1697.4	1812.5
28	1179.9	1274.5	1374.1	1477.9	1585.1	1696.1	1810.9
29	1177.5	1273.4	1373.1	1476.6	1583.8	1695.0	1809.7
30	1177.0	1273.0	1372.6	1476.1	1583.3	1694.7	1809.1
31	1175.8	1271.5	1370.1	1476.5	1582.8	1694.3	1807.5
32	1176.5	1271.9	1370.7	1473.4	1579.8	1689.9	1803.7
33	1171.2	1266.1	1364.9	1467.2	1573.3	1683.2	1796.7
34	1169.2	1264.1	1362.7	1465.0	1571.1	1680.8	1794.3
35*	1161.1	1257.1	1354.8	1456.1	1561.2	1669.9	1782.3
36	1161.2	1255.1	1352.7	1454.0	1559.0	1667.6	1779.9
37	1160.1	1254.0	1351.5	1452.8	1557.7	1666.3	1778.5
38	1159.6	1253.5	1351.0	1452.2	1557.1	1665.7	1777.9
39	1157.3	1250.2	1348.0	1448.6	1553.3	1661.4	1773.1
40	1156.7	1250.2	1347.3	1448.1	1552.5	1660.6	1772.3
41	1156.6	1249.4	1346.5	1447.3	1551.7	1659.7	1771.4
42	1155.7	1249.2	1346.3	1447.0	1551.4	1659.4	1771.1
43*	1155.3	1248.0	1345.2	1446.3	1551.0	1658.2	1769.3
44	1154.7	1247.4	1344.7	1445.6	1549.7	1657.1	1768.5
45	1153.9	1247.1	1343.9	1444.4	1548.4	1656.3	1767.7
46*	1156.3	1245.1	1337.2	1446.2	1551.8	1653.6	1765.0
47	1159.3	1254.3	1362.9	1465.2	1571.3	1681.1	1794.6
48	1161.5	1256.1	1354.4	1456.4	1562.1	1671.6	1784.7
49	1165.1	1259.7	1358.1	1460.2	1566.1	1675.6	1788.9
50	1148.6	1242.6	1340.4	1441.9	1547.1	1656.1	1768.8

TABLE 9(b) (CONTINUED)

CONFIG	Z=27	Z=28	Z=29	Z=30	Z=31	Z=32	Z=33
51	1163.2	1257.3	1356.2	1458.2	1564.1	1673.5	1786.7
52	1146.4	1240.4	1339.0	1439.4	1544.5	1653.3	1765.8
53*	1157.1	1251.7	1348.1	1449.2	1554.1	1662.5	1774.6
54	1139.8	1233.9	1329.7	1431.2	1534.4	1642.2	1753.7
55	1165.1	1194.3	1346.1	1447.2	1551.8	1660.2	1772.3
56	1134.7	1231.4	1328.1	1428.5	1532.6	1640.4	1751.8
57	1154.1	1247.7	1345.1	1446.0	1550.7	1659.9	1771.0
58	1136.5	1229.5	1326.2	1426.5	1531.5	1638.8	1749.6
59	1153.6	1247.2	1344.5	1445.4	1550.1	1658.3	1770.3
60	1135.7	1228.6	1325.2	1425.4	1529.4	1637.2	1748.3
61	1151.4	1244.3	1341.5	1442.1	1546.3	1654.1	1765.6
62	1134.2	1226.9	1323.3	1422.6	1526.5	1633.7	1744.6
63	1150.7	1243.3	1340.7	1441.3	1545.5	1653.3	1764.7
64	1133.1	1225.7	1321.6	1421.7	1525.2	1632.4	1743.2
65	1150.1	1243.3	1340.1	1440.5	1544.7	1652.5	1763.9
66	1132.0	1224.6	1320.6	1420.4	1523.9	1631.1	1741.8
67	1149.8	1243.1	1339.3	1440.3	1544.4	1652.1	1763.6
68	1131.4	1223.3	1320.3	1419.7	1523.1	1631.2	1741.9
69*	1148.3	1242.3	1338.9	1440.0	1543.7	1652.7	1762.6
70	1130.7	1222.5	1319.7	1419.1	1522.5	1630.9	1739.1
71	1148.5	1241.3	1338.1	1438.1	1542.1	1649.7	1761.6
72	1130.4	1222.7	1318.7	1417.9	1521.2	1628.2	1738.6
73	1147.9	1240.3	1337.4	1437.5	1541.4	1648.1	1760.2
74	1129.4	1221.6	1317.5	1417.1	1520.2	1627.0	1737.6
75*	1146.7	1239.4	1336.8	1437.1	1541.0	1644.9	1755.6

TABLE 9(b) (CONTINUED)

CONFIG	Z=27	Z=28	Z=29	Z=30	Z=31	Z=32	Z=33
76	1173.5	1224.2	1318.5	1416.0	1519.2	1622.9	1733.9

TABLE 9(b) (CONTINUED)

CONFIG	Z=34	Z=35	Z=36	Z=37	Z=38	Z=39	Z=40
1	2007.1	2135.7	2265.2	2494.8	2545.3	2689.9	2839.4
2	1970.8	2096.3	2224.9	2367.7	2494.3	2634.9	2779.2
3	1966.7	2091.6	2220.4	2353.1	2489.6	2630.0	2774.2
4	1964.5	2089.4	2218.1	2350.7	2487.1	2627.4	2771.6
5	1961.6	2086.2	2215.7	2347.6	2484.2	2624.1	2768.8
6	1960.2	2084.8	2214.2	2346.5	2483.5	2623.4	2768.0
7	1958.8	2083.5	2212.9	2345.1	2482.0	2621.9	2766.5
8	1957.3	2082.0	2211.2	2343.3	2480.3	2620.1	2764.7
9	1952.3	2076.3	2205.1	2337.7	2474.1	2613.3	2757.3
10	1951.2	2075.2	2204.0	2336.5	2472.9	2612.0	2755.9
11	1950.4	2074.4	2203.1	2335.6	2472.0	2611.1	2755.0
12	1950.1	2074.0	2202.7	2335.3	2471.6	2610.7	2754.6
13	1948.7	2072.7	2201.5	2333.6	2469.7	2608.3	2751.2
14	1946.9	2070.6	2199.3	2331.3	2467.1	2606.1	2749.4
15	1946.7	2070.0	2198.4	2330.6	2466.5	2605.3	2748.8
16	1943.1	2067.4	2196.9	2328.3	2464.6	2603.7	2749.2
17	1941.9	2066.7	2195.3	2327.8	2464.1	2624.4	2768.4
18	1937.8	2062.4	2191.9	2323.2	2459.4	2619.5	2763.4
19	1935.7	2060.3	2189.7	2321.0	2457.2	2617.2	2761.0
20	1942.8	2066.1	2193.3	2324.3	2459.2	2597.8	2740.2
21	1941.4	2063.7	2190.8	2321.8	2456.5	2595.1	2737.4
22	1939.2	2062.5	2189.5	2320.4	2455.1	2593.6	2735.9
23	1938.6	2061.3	2188.2	2319.7	2454.3	2592.8	2735.1
24	1933.6	2056.7	2182.9	2313.1	2447.2	2585.1	2726.8
25	1932.4	2055.1	2181.6	2311.8	2445.9	2583.8	2725.4

TABLE 9(b) (CONTINUED)

CONFIG	Z=34	Z=35	Z=36	Z=37	Z=38	Z=39	Z=40
26	1931.7	2054.3	2180.8	2311.0	2445.1	2582.9	2724.5
27	1931.4	2054.1	2180.4	2310.6	2444.7	2582.5	2724.1
28	1929.7	2051.9	2178.2	2307.9	2442.1	2579.3	2720.5
29	1928.3	2050.5	2176.6	2306.6	2440.4	2577.8	2718.9
30	1927.6	2049.9	2176.1	2305.8	2439.6	2577.1	2718.3
31	1925.6	2048.6	2174.5	2303.9	2437.4	2573.7	2718.9
32	1921.3	2042.5	2167.5	2296.7	2428.7	2564.9	2704.8
33	1914.6	2035.8	2159.8	2288.2	2420.4	2556.3	2695.9
34	1911.6	2032.5	2157.2	2285.5	2417.6	2553.5	2693.0
35*	1908.4	2029.2	2141.5	2268.5	2399.3	2533.8	2671.9
36	1895.9	2015.6	2138.9	2265.9	2396.6	2530.9	2669.0
37	1894.5	2014.1	2137.4	2264.3	2395.0	2529.3	2667.3
38	1893.8	2013.4	2136.6	2263.6	2394.2	2528.4	2666.4
39	1888.6	2007.6	2130.4	2256.7	2386.8	2520.4	2657.7
40	1887.8	2006.7	2129.5	2255.8	2385.9	2519.4	2656.7
41	1886.8	2005.6	2128.5	2254.8	2384.7	2518.4	2655.6
42	1886.4	2005.4	2128.1	2254.4	2384.3	2517.9	2655.2
43*	1885.7	2003.3	2126.2	2252.2	2381.4	2514.8	2652.2
44	1883.8	2002.4	2124.5	2250.6	2380.0	2513.2	2650.7
45	1882.7	2001.4	2123.7	2249.6	2379.3	2512.5	2649.6
46*	1882.5	2001.1	2124.5	2248.6	2384.1	2516.1	2653.3
47	1911.9	2032.5	2157.5	2285.9	2418.1	2553.9	2693.5
48	1881.6	2002.3	2146.6	2274.7	2406.5	2542.0	2681.2
49	1915.9	2026.7	2151.1	2279.3	2411.2	2546.8	2686.2
50	1885.1	2005.2	2129.1	2256.6	2387.9	2522.9	2661.6

TABLE 9(b) (CONTINUED)

CONFIG	Z=34	Z=35	Z=36	Z=37	Z=38	Z=39	Z=40
51	1903.7	2024.4	2149.8	2276.9	2408.7	2544.3	2683.5
52	1888.1	2008.0	2125.7	2253.1	2384.3	2519.2	2657.7
53*	1896.4	2009.3	2132.9	2259.7	2390.3	2524.4	2662.3
54	1868.8	1987.6	2110.1	2236.3	2366.1	2499.7	2636.8
55	1889.0	2007.4	2130.4	2257.1	2387.6	2521.7	2659.4
56	1866.9	1985.7	2108.1	2234.2	2364.1	2497.5	2634.7
57	1886.7	2006.0	2129.0	2255.7	2386.1	2520.1	2657.8
58	1864.6	1983.7	2105.7	2231.7	2361.5	2494.9	2631.9
59	1885.9	2005.7	2128.2	2254.9	2385.2	2519.2	2656.9
60	1863.2	1981.9	2104.2	2230.2	2359.8	2493.2	2630.2
61	1885.7	1999.6	2122.9	2248.1	2377.9	2511.2	2648.3
62	1859.1	1977.2	2099.1	2224.5	2353.6	2486.4	2622.8
63	1879.9	1998.6	2121.1	2247.1	2376.9	2510.2	2647.3
64	1857.7	1975.8	2097.7	2222.9	2352.1	2484.8	2621.2
65	1879.0	1997.7	2120.1	2246.2	2375.9	2509.2	2646.2
66	1856.2	1974.2	2095.9	2221.3	2350.3	2483.0	2619.3
67	1878.6	1997.4	2119.7	2245.8	2375.4	2508.8	2645.7
68	1855.3	1973.3	2095.0	2220.3	2349.3	2482.0	2618.2
69*	1876.2	1994.7	2117.0	2243.2	2372.8	2505.8	2641.2
70	1953.4	1972.0	2093.1	2218.2	2347.0	2479.4	2615.1
71	1875.5	1994.0	2116.0	2241.8	2371.0	2504.1	2640.9
72	1852.6	1971.4	2092.0	2217.0	2345.7	2477.0	2614.1
73	1874.0	1993.7	2115.4	2241.0	2370.4	2503.4	2640.0
74	1851.5	1969.7	2091.7	2215.7	2344.3	2476.5	2612.6
75*	1871.5	1992.5	2112.7	2234.8	2371.1	2501.6	2636.0

TABLE 9(b) (CONCLUDED)

CONFIG	Z=34	Z=35	Z=36	Z=37	Z=38	Z=39	Z=40
76	1854.9	1967.2	2089.9	2216.9	2343.3	2475.4	2613.4

TABLE 10(a)–CONFIGURATION LIST FOR 11 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S 2S 2P 3S 3P 3D 4S 4P 4D 4F 5S 5P 5D 5F 6S 6P 6D 7S
GROUND CONFIGURATION		
1		2 2 6 1
ONE-ELECTRON EXCITED CONFIGURATIONS		
2	ODD	2 2 6 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3		2 2 6 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
4		2 2 6 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
5	ODD	2 2 6 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
6		2 2 6 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
7	ODD	2 2 6 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
8		2 2 6 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
9	ODD	2 2 6 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
10		2 2 6 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
11	ODD	2 2 5 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
12		2 2 6 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
13	ODD	2 2 5 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
14		2 2 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
15		2 2 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
16	ODD	2 2 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
17		2 2 5 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
18	ODD	2 2 5 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
19	ODD	2 2 5 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
20		2 2 5 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
21	ODD	2 2 5 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
22		2 2 5 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
23	ODD	2 2 5 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
24		2 2 5 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
25	ODD	2 2 5 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
26		2 2 5 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
27	ODD	2 2 5 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
28		2 2 5 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
29	ODD	2 2 5 1 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
30	ODD	2 2 5 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
31		2 1 6 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
32	ODD	2 2 6 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
33		2 2 6 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
34		2 2 6 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
35	ODD	2 2 6 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0
36		2 2 6 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
37	ODD	2 2 6 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
38		2 2 6 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
39	ODD	2 2 6 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
40		2 2 6 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
41	ODD	2 2 6 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
42		2 2 6 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
43	ODD	2 2 6 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
44		2 2 6 1 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
45		2 2 6 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
TWO-ELECTRON EXCITED CONFIGURATIONS		
46	ODD	2 2 6 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0
47		2 2 6 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0

TABLE 10(a) (CONCLUDED)

48		2	2	5	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
49	000	2	1	5	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
50		2	2	5	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
51	001	2	1	5	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
52	010	2	2	5	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
53		2	1	5	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
54		2	2	5	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
55	011	2	1	5	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
56	100	2	2	5	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
57		2	1	5	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
58		2	2	5	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
59	101	2	1	5	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
60	110	2	2	5	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
61		2	1	5	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
62		2	2	5	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
63	111	2	1	5	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
64	000	2	2	5	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
65		2	1	5	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
66		2	2	5	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
67	001	2	1	5	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
68	010	2	2	5	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
69		2	1	5	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
70		2	2	5	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
71	011	2	1	5	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
72		2	2	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
73	010	2	1	6	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1

TABLE 10(b)–11 ELECTRONS

CONFIG	Z=22	Z=23	Z=24	Z=25	Z=26	Z=27	Z=28
1	789.0	871.2	957.6	1048.1	1142.8	1241.5	1344.3
2	787.0	869.1	955.3	1045.6	1140.0	1238.6	1341.2
3	785.8	867.9	954.0	1044.1	1138.4	1236.8	1339.3
4	783.3	864.8	950.4	1040.0	1133.7	1231.5	1333.3
5	782.8	863.9	949.4	1039.0	1132.7	1230.4	1332.2
6	781.5	862.9	948.3	1037.8	1131.4	1229.1	1330.8
7	781.2	862.5	947.9	1037.3	1130.8	1228.4	1330.1
8	780.7	861.8	947.0	1036.2	1129.5	1226.8	1328.1
9	780.2	861.3	946.4	1035.6	1128.8	1226.1	1327.4
10	779.7	860.8	945.9	1035.0	1128.2	1225.5	1326.7
11	779.5	860.6	945.7	1034.8	1127.9	1225.1	1326.4
12	779.2	860.2	945.1	1034.1	1127.2	1224.2	1325.3
13	779.0	859.9	944.9	1033.9	1126.9	1223.9	1325.0
14	778.7	859.6	944.6	1033.5	1126.5	1223.5	1324.6
15	778.5	859.3	944.1	1033.0	1125.9	1222.8	1323.8
16	784.6	865.2	949.8	1038.3	1130.8	1227.3	1327.7
17	780.6	860.9	945.1	1033.3	1125.6	1221.7	1321.9
18	778.9	859.1	943.2	1031.4	1123.5	1219.6	1319.7
19*	777.1	856.7	940.3	1027.8	1119.2	1214.6	1313.8
20	775.5	855.1	938.6	1026.0	1117.3	1212.6	1311.7
21	774.6	854.1	937.6	1024.9	1116.2	1211.4	1310.5
22	774.3	853.8	937.2	1024.5	1115.8	1210.9	1310.0
23	773.8	853.3	936.2	1023.2	1114.2	1209.1	1307.8
24	773.3	852.6	935.7	1022.7	1113.7	1208.5	1307.2
25	772.7	851.9	935.0	1022.0	1112.9	1207.7	1306.4

TABLE 10(b) (CONTINUED)

CONFIG	Z=22	Z=23	Z=24	Z=25	Z=26	Z=27	Z=28
26	772.6	851.8	934.8	1021.8	1112.7	1207.5	1306.2
27*	773.3	852.0	935.3	1021.7	1112.9	1207.5	1306.7
28	772.4	851.2	934.1	1021.3	1111.7	1206.1	1304.9
29	771.8	850.6	933.7	1020.6	1111.0	1205.8	1304.3
30*	772.6	854.6	933.6	1022.5	1107.5	1201.7	1307.6
31	778.6	858.2	943.1	1031.3	1123.4	1219.5	1319.6
32	775.3	855.3	936.3	1027.2	1119.1	1215.0	1314.8
33	773.8	853.7	937.6	1028.4	1117.2	1213.0	1312.8
34*	771.9	851.2	934.5	1021.7	1112.8	1207.9	1306.8
35	770.4	849.6	932.8	1019.9	1111.0	1205.9	1304.8
36	769.5	848.8	931.9	1019.0	1109.9	1204.8	1303.7
37	769.2	848.4	931.5	1018.5	1109.5	1204.3	1303.1
38	768.7	847.6	930.5	1017.3	1107.9	1202.5	1301.0
39	768.2	847.1	930.0	1016.7	1107.4	1201.9	1300.3
40	767.7	846.6	929.4	1016.1	1106.7	1201.2	1299.6
41	767.5	846.4	929.2	1015.9	1106.4	1200.9	1299.3
42*	767.9	846.5	929.4	1016.1	1106.2	1200.5	1299.5
43	767.3	846.0	928.6	1015.3	1105.8	1199.8	1298.6
44	766.6	845.3	928.1	1014.6	1104.8	1199.3	1297.4
45*	768.7	845.7	927.3	1016.5	1104.5	1197.9	1300.1
46	777.9	858.0	942.1	1030.2	1122.2	1218.3	1318.3
47	772.7	852.6	936.4	1024.1	1115.9	1211.6	1311.3
48	776.7	856.7	940.8	1028.8	1120.7	1216.7	1316.6
49	771.6	851.4	935.1	1022.8	1114.5	1210.1	1309.8
50	774.5	854.0	937.5	1024.8	1116.1	1211.3	1310.4

TABLE 10(b) (CONTINUED)

CONFIG	Z=22	Z=23	Z=24	Z=25	Z=26	Z=27	Z=28
51	769.4	848.6	931.7	1018.8	1109.7	1204.6	1303.4
52*	773.4	852.8	936.1	1023.4	1114.5	1209.7	1308.7
53*	768.3	847.4	930.4	1017.4	1108.3	1203.1	1301.8
54	772.4	851.7	935.0	1022.2	1113.4	1208.4	1307.4
55	767.3	846.4	929.4	1016.3	1107.1	1201.9	1300.6
56	772.1	851.4	934.7	1021.8	1112.9	1208.0	1306.9
57	767.0	846.1	929.0	1015.9	1106.7	1201.4	1300.1
58	771.5	850.6	933.6	1020.6	1111.4	1206.1	1304.7
59	766.5	845.3	928.0	1014.6	1105.1	1199.6	1297.9
60*	771.1	850.2	933.2	1020.1	1110.9	1205.5	1304.1
61*	766.1	844.8	927.6	1014.1	1104.6	1199.0	1297.3
62	770.5	849.5	932.5	1019.3	1110.1	1204.8	1303.3
63	765.5	844.2	926.9	1013.4	1103.9	1198.2	1296.5
64	770.3	849.4	932.3	1019.1	1109.9	1204.5	1303.1
65	765.3	844.0	926.7	1013.2	1103.6	1198.0	1296.2
66	770.7	849.5	932.3	1019.1	1110.1	1204.1	1302.5
67	765.7	844.1	926.7	1013.3	1103.9	1197.6	1296.1
68*	775.2	849.1	931.8	1018.5	1109.0	1203.5	1301.9
69*	765.0	843.7	926.2	1012.5	1102.8	1196.9	1295.2
70	769.5	848.4	931.1	1017.8	1108.3	1202.9	1301.1
71	764.4	843.0	925.5	1011.9	1102.1	1196.3	1294.3
72	767.5	851.2	930.5	1018.1	1110.0	1202.1	1305.4
73	763.0	844.9	926.0	1013.7	1103.4	1195.3	1294.7

TABLE 10(b) (CONTINUED)

CONFIG	Z=29	Z=30	Z=31	Z=32	Z=33	Z=34	Z=35
1	1451.3	1562.3	1677.5	1796.8	1920.2	2047.7	2179.3
2	1448.9	1559.9	1673.8	1792.9	1916.1	2043.5	2174.9
3	1445.9	1556.6	1671.4	1790.4	1913.4	2040.6	2171.9
4	1439.2	1549.2	1663.2	1781.3	1903.4	2029.6	2159.9
5	1438.9	1547.9	1661.8	1779.9	1902.0	2028.1	2158.3
6	1436.5	1546.4	1660.2	1778.2	1900.2	2026.3	2156.4
7	1435.8	1545.5	1659.4	1777.3	1899.2	2025.2	2155.3
8	1433.6	1542.9	1656.4	1773.9	1895.4	2021.0	2150.6
9	1432.8	1542.1	1655.6	1773.0	1894.6	2020.1	2149.7
10	1432.0	1541.4	1654.8	1772.2	1893.7	2019.2	2148.8
11	1431.7	1541.0	1654.4	1771.8	1893.2	2018.7	2149.2
12	1430.4	1539.6	1652.7	1769.9	1891.2	2016.4	2145.7
13	1430.1	1539.2	1652.3	1769.5	1890.7	2016.0	2145.2
14	1429.6	1538.8	1651.9	1769.0	1890.2	2015.4	2144.7
15	1428.7	1537.7	1650.7	1767.7	1888.7	2013.8	2142.9
16	1432.1	1540.5	1652.8	1769.2	1889.4	2013.7	2142.0
17	1426.0	1534.1	1646.1	1762.2	1882.2	2006.2	2134.1
18	1423.7	1531.7	1643.7	1759.7	1879.6	2003.5	2131.4
19*	1417.0	1524.1	1635.1	1750.0	1868.9	1991.7	2118.4
20	1414.8	1521.8	1632.8	1747.6	1866.4	1989.2	2115.8
21	1413.6	1520.5	1631.4	1746.2	1865.0	1987.7	2114.2
22	1413.0	1519.9	1630.8	1745.6	1864.3	1986.9	2113.5
23	1410.5	1517.0	1627.5	1741.9	1860.1	1982.3	2108.4
24	1409.8	1516.4	1626.8	1741.1	1859.4	1981.5	2107.6
25	1409.0	1515.5	1625.9	1740.2	1858.4	1980.5	2106.5

TABLE 10(b) (CONTINUED)

CONFIG	Z=29	Z=30	Z=31	Z=32	Z=33	Z=34	Z=35
26	1408.7	1515.2	1625.6	1739.9	1858.1	1980.1	2106.1
27*	1406.8	1514.0	1624.9	1739.0	1857.2	1979.3	2104.7
28	1407.4	1513.9	1624.1	1737.8	1855.8	1977.6	2103.5
29	1406.7	1512.9	1623.0	1737.0	1855.0	1976.7	2102.5
30*	1402.6	1510.9	1623.4	1743.7	1859.5	1980.3	2106.7
31	1423.7	1531.7	1643.7	1759.7	1879.7	2003.6	2131.5
32	1418.6	1526.4	1638.2	1753.9	1873.6	1997.3	2124.9
33	1416.6	1524.3	1636.0	1751.6	1871.2	1994.8	2122.4
34*	1409.7	1516.5	1627.2	1741.9	1860.4	1982.9	2109.3
35	1407.6	1514.3	1624.9	1739.5	1858.0	1980.4	2106.8
36	1406.4	1513.1	1623.7	1738.2	1856.6	1979.0	2105.3
37	1405.8	1512.5	1623.0	1737.5	1855.9	1978.3	2104.5
38	1403.3	1509.6	1619.8	1733.8	1851.8	1973.7	2099.4
39	1402.7	1508.8	1619.0	1733.0	1851.0	1972.8	2098.6
40	1401.9	1508.1	1618.2	1732.2	1850.1	1971.9	2097.6
41	1401.6	1507.8	1617.9	1731.8	1849.7	1971.5	2097.2
42*	1401.3	1507.3	1617.2	1730.6	1848.7	1969.8	2095.4
43	1400.1	1505.8	1616.2	1729.8	1847.1	1968.7	2094.0
44	1399.4	1505.4	1615.3	1728.9	1846.6	1968.1	2093.5
45*	1397.5	1504.4	1611.4	1731.3	1846.8	1966.1	2091.2
46	1422.2	1530.2	1642.1	1758.0	1877.8	2001.7	2129.5
47	1415.0	1522.6	1634.2	1749.8	1869.4	1992.9	2120.4
48	1420.5	1528.4	1640.2	1756.1	1875.8	1999.6	2127.3
49	1413.4	1520.9	1632.5	1748.0	1867.5	1991.0	2118.4
50	1413.4	1520.3	1631.2	1746.0	1864.8	1987.4	2114.0

TABLE 10(b) (CONTINUED)

CONFIG	Z=29	Z=30	Z=31	Z=32	Z=33	Z=34	Z=35
51	1406.2	1512.8	1623.4	1737.9	1856.4	1978.7	2105.0
52*	1411.6	1518.5	1629.3	1744.0	1862.7	1985.3	2111.8
53*	1404.5	1511.0	1621.5	1736.0	1854.3	1976.6	2102.8
54	1410.3	1517.1	1627.9	1742.6	1861.2	1983.7	2110.1
55	1403.2	1509.7	1620.2	1734.5	1852.9	1975.1	2101.2
56	1409.8	1516.6	1627.3	1741.9	1860.5	1983.0	2109.4
57	1402.6	1509.1	1619.5	1733.9	1852.2	1974.4	2100.5
58	1407.2	1513.7	1624.0	1738.2	1856.3	1978.4	2104.3
59	1400.1	1506.2	1616.3	1730.2	1848.0	1969.8	2095.4
60*	1406.6	1513.0	1623.3	1737.5	1855.6	1977.6	2103.5
61*	1399.5	1505.6	1615.6	1729.5	1847.3	1969.0	2094.6
62	1405.8	1512.1	1622.4	1736.6	1854.6	1976.6	2102.4
63	1398.7	1504.7	1614.7	1728.6	1846.3	1968.0	2093.6
64	1405.5	1511.8	1622.1	1736.2	1854.3	1976.2	2102.1
65	1398.4	1504.4	1614.4	1728.2	1846.0	1967.6	2093.2
66	1405.2	1511.1	1621.3	1735.0	1852.8	1974.9	2100.1
67	1397.7	1503.7	1613.4	1727.0	1844.8	1966.4	2091.6
68*	1404.1	1510.1	1620.4	1734.1	1851.9	1973.5	2099.4
69*	1397.0	1502.8	1612.6	1725.9	1843.5	1964.9	2090.2
70	1403.3	1509.4	1619.4	1733.3	1851.1	1972.7	2098.3
71	1396.2	1502.0	1611.8	1725.4	1842.8	1964.2	2089.4
72	1402.8	1508.9	1619.8	1731.8	1849.3	1969.1	2100.2
73	1395.9	1502.6	1612.2	1724.4	1842.3	1966.7	2088.6

TABLE 10(b) (CONTINUED)

CONFIG	Z=36	Z=37	Z=38	Z=39	Z=40	Z=41	Z=42
1	2315.0	2454.8	2598.8	2746.8	2899.0	3055.3	3215.7
2	2310.4	2450.1	2593.9	2741.7	2893.7	3049.8	3210.0
3	2307.3	2446.8	2590.4	2738.1	2889.9	3045.9	3205.9
4	2294.2	2432.5	2574.9	2721.4	2872.0	3026.6	3185.2
5	2292.6	2430.9	2573.3	2719.7	2870.2	3024.8	3183.4
6	2290.6	2428.9	2571.2	2717.6	2868.1	3022.5	3181.2
7	2289.4	2427.6	2569.9	2716.3	2866.7	3021.1	3179.6
8	2284.3	2422.0	2563.7	2709.5	2859.3	3013.2	3171.1
9	2283.3	2421.0	2562.7	2708.5	2858.2	3012.1	3169.9
10	2282.4	2420.0	2561.7	2707.4	2857.1	3010.9	3168.8
11	2281.8	2419.4	2561.1	2706.8	2856.5	3010.3	3168.1
12	2279.0	2416.3	2557.7	2703.1	2852.5	3006.0	3163.4
13	2278.5	2415.8	2557.2	2702.5	2851.9	3005.4	3162.8
14	2277.9	2415.2	2556.6	2701.9	2851.3	3004.7	3162.1
15	2276.0	2413.1	2554.2	2699.4	2848.6	3001.8	3159.0
16	2274.2	2410.4	2550.5	2694.6	2842.7	2994.8	3150.9
17	2266.0	2401.9	2541.8	2685.6	2833.4	2985.2	3141.0
18	2263.2	2399.1	2538.8	2682.6	2830.3	2982.0	3137.7
19*	2249.1	2383.6	2522.1	2664.5	2810.9	2961.2	3115.3
20	2246.4	2380.8	2519.3	2661.6	2807.9	2958.0	3112.1
21	2244.8	2379.2	2517.5	2659.8	2806.0	2956.2	3110.2
22	2243.9	2378.3	2516.7	2658.9	2805.1	2955.2	3109.2
23	2238.3	2372.2	2510.0	2651.7	2797.2	2946.7	3100.1
24	2237.4	2371.4	2509.1	2650.7	2796.2	2945.6	3099.0
25	2236.4	2370.2	2507.9	2649.6	2795.1	2944.5	3097.8

TABLE 10(b) (CONTINUED)

CONFIG	Z=36	Z=37	Z=38	Z=39	Z=40	Z=41	Z=42
26	2235.0	2369.8	2507.5	2649.1	2794.6	2944.0	3097.3
27*	2234.4	2368.8	2506.3	2646.6	2791.7	2940.4	3093.5
28	2232.8	2366.3	2503.8	2644.8	2789.9	2939.2	3092.5
29	2232.0	2365.4	2502.8	2644.0	2789.2	2938.2	3091.1
30*	2234.7	2364.3	2504.1	2641.5	2792.4	2934.4	3086.4
31	2263.4	2399.2	2539.0	2682.8	2830.6	2982.3	3138.0
32	2256.6	2392.1	2531.7	2675.2	2822.7	2974.2	3129.7
33	2254.0	2389.5	2529.0	2672.4	2819.9	2971.3	3126.7
34*	2239.7	2373.9	2512.1	2654.2	2800.3	2950.3	3104.2
35	2237.0	2371.2	2509.3	2651.3	2797.3	2947.2	3101.0
36	2235.5	2369.7	2507.7	2649.7	2795.6	2945.4	3099.2
37	2234.7	2368.8	2506.8	2648.8	2794.6	2944.4	3098.2
38	2229.1	2362.7	2500.2	2641.5	2786.8	2936.0	3089.1
39	2228.2	2361.7	2499.2	2640.5	2785.8	2934.9	3088.0
40	2227.2	2360.7	2498.1	2639.5	2784.7	2933.8	3086.8
41	2226.8	2360.3	2497.7	2639.0	2784.2	2933.3	3086.3
42*	2225.7	2357.9	2496.3	2636.5	2781.3	2930.3	3082.9
43	2223.5	2356.9	2493.5	2634.7	2779.7	2928.4	3081.2
44	2222.9	2356.0	2492.9	2633.9	2778.9	2927.5	3080.1
45*	2225.0	2352.2	2492.8	2634.5	2777.2	2931.2	3072.5
46	2261.2	2397.0	2536.7	2680.4	2828.1	2979.7	3135.3
47	2251.9	2387.3	2526.7	2670.1	2817.5	2968.8	3124.1
48	2259.0	2394.7	2534.4	2678.0	2825.6	2977.2	3132.7
49	2249.8	2385.2	2524.5	2667.9	2815.2	2966.4	3121.7
50	2244.5	2378.9	2517.3	2659.5	2805.8	2955.9	3109.9

TABLE 10(b) (CONCLUDED)

CONFIG	Z=36	Z=37	Z=38	Z=39	Z=40	Z=41	Z=42
51	2238.2	2369.3	2507.4	2649.3	2795.3	2945.1	3098.8
52*	2242.2	2376.5	2514.8	2657.0	2803.1	2953.2	3107.1
53*	2232.9	2367.0	2504.9	2646.8	2792.6	2942.4	3096.0
54	2240.5	2374.8	2513.0	2655.2	2801.2	2951.2	3105.1
55	2231.3	2365.3	2503.2	2645.1	2790.8	2940.5	3094.1
56	2239.7	2374.0	2512.2	2654.3	2800.3	2950.3	3104.1
57	2230.5	2364.5	2502.4	2644.2	2789.9	2939.6	3093.1
58	2234.1	2367.9	2505.8	2647.0	2792.4	2941.8	3095.0
59	2224.9	2358.4	2495.7	2636.9	2782.1	2931.1	3084.0
60*	2233.3	2367.0	2504.6	2646.1	2791.5	2940.8	3094.1
61*	2224.1	2357.5	2494.8	2636.0	2781.1	2930.1	3083.0
62	2232.2	2365.9	2503.5	2644.9	2790.3	2939.6	3092.7
63	2223.0	2356.4	2493.7	2634.8	2779.9	2928.9	3081.8
64	2231.8	2365.5	2503.0	2644.5	2789.8	2939.1	3092.2
65	2222.6	2356.0	2493.2	2634.4	2779.4	2928.4	3081.3
66	2230.1	2363.2	2500.5	2641.8	2786.6	2935.6	3088.9
67	2220.5	2353.7	2490.8	2631.9	2776.6	2924.9	3078.0
68*	2229.0	2362.0	2499.2	2640.4	2785.3	2934.4	3087.1
69*	2219.4	2352.2	2489.3	2630.4	2774.8	2923.8	3076.1
70	2227.7	2361.0	2498.4	2639.5	2784.4	2933.3	3086.1
71	2218.5	2351.6	2488.6	2629.3	2774.0	2922.6	3075.2
72	2228.3	2360.9	2495.5	2635.8	2780.9	2929.2	3084.1
73	2219.5	2351.9	2487.4	2624.5	2771.9	2921.7	3074.3

TABLE 11(a)–CONFIGURATION LIST FOR 12 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S	2S	2P	3S	3P	3D	4S	4P	4D	4F	5S	5P	5D	5F	6S	6P	6D	7S
GROUND CONFIGURATION																			
1		2	2	6	2														
ONE-ELECTRON EXCITED CONFIGURATIONS																			
2	ODD	2	2	6	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
3		2	2	6	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4		2	2	6	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
5	ODD	2	2	6	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
6		2	2	6	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
7	ODD	2	2	6	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8		2	2	6	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
9	ODD	2	2	6	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
10		2	2	6	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
11	ODD	2	2	6	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
12		2	2	6	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
13	ODD	2	2	6	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
14		2	2	6	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
15		2	2	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16		2	2	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
17	ODD	2	2	5	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0
18	ODD	2	2	5	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0
19		2	2	5	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
20	ODD	2	2	5	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
21		2	2	5	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0
22	ODD	2	2	5	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0
23		2	2	5	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0
24	ODD	2	2	5	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0
25		2	2	5	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0
26	ODD	2	2	5	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0
27		2	2	5	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0
28	ODD	2	2	5	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0
29	ODD	2	2	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1
30	ODD	2	1	6	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
31		2	1	6	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0
32		2	1	6	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0
33	ODD	2	1	6	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
34		2	1	6	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
35	ODD	2	1	6	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0
36		2	1	6	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0
37	ODD	2	1	6	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0
38		2	1	6	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0
39	ODD	2	1	6	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0
40		2	1	6	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0
41	ODD	2	1	6	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0
42		2	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0
43		2	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TWO-ELECTRON EXCITED CONFIGURATIONS																			
44		2	2	6	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
45	ODD	2	2	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
46		2	1	6	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
47	ODD	2	2	6	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 11(a) (CONCLUDED)

48		2	2	5	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
49	000	2	1	5	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
50	000	2	2	6	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
51		2	2	5	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0
52	000	2	1	6	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0
53		2	2	6	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
54	000	2	2	5	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
55		2	1	6	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
56	000	2	2	6	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
57		2	2	5	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
58	000	2	1	5	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
59		2	2	6	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
60	000	2	2	5	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
61		2	1	6	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
62	000	2	2	6	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
63		2	2	5	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0
64	000	2	1	6	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0
65		2	2	6	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
66	000	2	2	5	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0
67		2	1	6	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0
68	000	2	2	6	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
69		2	2	5	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0
70	000	2	1	6	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0
71		2	2	6	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
72	000	2	2	5	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0
73		2	1	6	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0
74	000	2	2	6	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
75		2	2	5	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0
76	000	2	1	6	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0
77		2	2	6	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
78	000	2	2	5	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0
79		2	1	6	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0
80	000	2	2	6	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
81		2	2	5	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0
82	000	2	1	6	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0
83	000	2	2	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
84		2	2	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
85	000	2	1	6	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1

TABLE 11(b)–12 ELECTRONS

CONFIG	Z=24	Z=25	Z=26	Z=27	Z=28	Z=29	Z=30
1	972.4	1064.9	1161.5	1262.4	1367.4	1476.7	1590.2
2	970.0	1062.3	1158.7	1259.4	1364.2	1473.4	1586.7
3	968.2	1060.3	1156.6	1257.1	1361.8	1470.8	1583.9
4	965.0	1056.6	1152.3	1252.2	1356.2	1464.4	1576.8
5	963.6	1055.0	1150.6	1250.4	1354.4	1462.6	1574.9
6	961.7	1053.0	1148.6	1248.3	1352.1	1460.2	1572.4
7	960.8	1052.1	1147.5	1247.1	1350.9	1458.8	1571.0
8	961.2	1052.3	1147.6	1247.0	1350.5	1458.2	1570.1
9	960.1	1051.1	1146.3	1245.6	1349.1	1456.7	1568.6
10	958.8	1049.5	1144.9	1244.2	1347.6	1455.2	1566.9
11	958.3	1049.2	1144.3	1243.5	1346.8	1454.3	1566.0
12	959.1	1049.9	1145.0	1243.7	1347.4	1454.4	1566.0
13	958.5	1049.0	1143.9	1243.1	1346.5	1453.6	1565.1
14	957.2	1048.1	1143.0	1241.9	1345.1	1452.5	1564.0
15	956.8	1045.5	1147.2	1244.4	1343.7	1453.2	1562.4
16	959.3	1049.4	1143.6	1241.8	1344.1	1450.5	1561.0
17	956.9	1046.5	1141.0	1239.1	1341.4	1447.7	1558.1
18	953.2	1042.6	1136.1	1233.5	1335.0	1440.6	1550.1
19	950.8	1040.1	1133.4	1230.8	1332.2	1437.6	1547.0
20	949.3	1038.6	1131.8	1229.2	1330.5	1435.9	1545.3
21	947.5	1036.8	1130.0	1227.3	1328.6	1433.9	1543.3
22	948.6	1037.6	1130.5	1227.5	1328.4	1433.4	1542.4
23	947.1	1036.0	1128.9	1225.8	1326.7	1431.6	1540.5
24	945.8	1034.6	1127.4	1224.3	1325.1	1430.0	1538.8
25	944.8	1033.6	1126.4	1223.1	1323.9	1428.7	1537.5

TABLE 11(b) (CONTINUED)

CONFIG	Z=24	Z=25	Z=26	Z=27	Z=28	Z=29	Z=30
26	946.0	1035.0	1127.7	1224.1	1325.4	1429.9	1538.6
27	945.0	1033.7	1126.3	1223.1	1323.3	1428.2	1536.8
28	944.0	1032.5	1125.3	1221.8	1322.4	1427.0	1535.5
29	946.3	1031.5	1123.7	1226.4	1320.6	1427.1	1534.5
30	953.5	1043.3	1137.1	1235.1	1337.1	1443.2	1553.3
31	951.3	1041.0	1134.5	1232.6	1334.6	1440.6	1550.7
32	946.8	1035.9	1129.0	1226.2	1327.3	1432.5	1541.7
33	944.4	1033.4	1126.4	1223.4	1324.5	1429.6	1538.7
34	943.0	1031.9	1124.9	1221.8	1322.9	1427.9	1537.0
35	941.2	1030.1	1123.0	1220.0	1320.9	1425.9	1535.0
36	942.3	1030.9	1123.5	1220.2	1320.8	1425.4	1534.1
37	940.8	1029.4	1121.9	1218.5	1319.1	1423.6	1532.2
38	939.4	1028.0	1120.5	1217.0	1317.5	1422.0	1530.6
39	938.5	1027.0	1119.4	1215.9	1316.3	1420.8	1529.3
40	939.9	1028.2	1120.6	1216.7	1317.4	1421.7	1530.1
41	938.6	1027.1	1119.4	1215.8	1316.0	1420.2	1528.5
42	937.8	1026.0	1118.3	1214.5	1314.8	1419.1	1527.3
43	939.0	1027.0	1118.7	1216.3	1312.7	1418.8	1527.2
44	967.7	1059.7	1155.9	1256.4	1361.1	1470.0	1583.2
45	956.5	1046.4	1140.4	1238.5	1340.7	1446.9	1557.3
46	950.7	1040.3	1134.0	1231.8	1333.7	1439.7	1549.7
47	966.3	1058.1	1154.2	1254.6	1359.1	1467.9	1580.8
48	955.0	1044.9	1138.8	1236.8	1333.9	1445.1	1555.3
49	949.3	1038.9	1132.5	1230.2	1332.0	1437.9	1547.9
50	963.2	1054.5	1150.2	1249.9	1353.8	1461.9	1574.1

TABLE 11(b) (CONTINUED)

CONFIG	Z=24	Z=25	Z=26	Z=27	Z=28	Z=29	Z=30
51*	952.4	1041.5	1134.3	1232.1	1333.4	1438.7	1548.1
52*	946.7	1035.5	1128.5	1225.5	1326.8	1431.5	1540.6
53	961.3	1053.1	1146.8	1248.3	1352.1	1460.1	1572.2
54*	950.8	1040.0	1133.1	1230.3	1331.6	1436.8	1546.1
55*	945.2	1034.0	1126.8	1223.7	1324.7	1429.6	1538.6
56	960.1	1051.5	1146.7	1246.2	1349.9	1457.8	1569.9
57	949.7	1038.3	1131.9	1229.0	1330.2	1435.4	1544.6
58	944.0	1032.5	1125.8	1222.5	1323.3	1428.3	1537.2
59	959.3	1050.4	1145.7	1245.2	1348.8	1456.6	1568.5
60	949.3	1038.5	1131.4	1228.5	1329.6	1434.8	1544.0
61	943.6	1032.4	1125.1	1221.9	1322.8	1427.6	1536.5
62	959.7	1050.7	1145.5	1243.0	1348.4	1456.0	1567.7
63	948.5	1037.3	1130.1	1226.5	1327.7	1432.6	1541.4
64	942.9	1031.5	1123.9	1220.4	1320.9	1425.4	1534.0
65	958.6	1049.5	1144.6	1243.8	1347.1	1454.6	1566.2
66*	948.1	1038.9	1129.7	1226.3	1327.3	1432.1	1540.9
67*	942.5	1031.8	1123.5	1220.0	1320.5	1425.0	1533.5
68	957.5	1048.3	1143.3	1242.4	1345.7	1453.1	1564.7
69	947.4	1036.2	1126.9	1225.6	1326.4	1431.2	1540.0
70	941.8	1030.2	1122.7	1219.1	1319.6	1424.1	1532.6
71	957.0	1047.3	1142.7	1241.7	1344.9	1452.3	1563.8
72	947.2	1035.9	1128.7	1223.4	1326.1	1430.9	1539.7
73	941.6	1030.0	1122.4	1218.9	1319.3	1423.8	1532.2
74	957.3	1048.3	1143.2	1242.3	1345.4	1452.8	1564.0
75*	947.7	1036.4	1129.0	1223.1	1326.2	1430.7	1539.0

TABLE 11(b) (CONTINUED)

CONFIG	Z=24	Z=25	Z=26	Z=27	Z=28	Z=29	Z=30
76*	942.0	1031.0	1122.6	1218.9	1319.3	1423.0	1532.3
77	956.9	1047.6	1142.5	1241.3	1344.4	1451.7	1563.0
78*	946.9	1035.5	1127.7	1224.8	1325.0	1430.0	1538.5
79*	941.4	1029.6	1121.6	1218.3	1318.5	1422.8	1530.8
80	956.1	1046.7	1141.5	1240.3	1343.4	1450.5	1561.9
81	946.1	1034.8	1127.4	1223.8	1324.4	1429.0	1537.5
82	940.5	1028.9	1121.2	1217.3	1317.6	1421.9	1530.0
83	955.9	1046.7	1141.8	1240.0	1342.4	1450.8	1561.3
84*	946.0	1035.0	1128.4	1229.5	1322.5	1430.0	1534.2
85*	943.3	1027.0	1122.8	1218.5	1313.6	1424.6	1528.3

TABLE 11(b) (CONTINUED)

CONFIG	Z=31	Z=32	Z=33	Z=34	Z=35	Z=36	Z=37
1	1721.4	1843.3	1970.3	2101.2	2236.2	2375.4	2518.9
2	1704.2	1826.0	1952.0	2082.2	2216.7	2355.3	2498.2
3	1701.3	1822.9	1948.8	2078.8	2213.1	2351.6	2494.3
4	1693.4	1814.2	1939.1	2068.2	2201.4	2338.8	2480.4
5	1691.4	1812.0	1936.9	2065.9	2199.1	2336.4	2477.9
6	1688.8	1809.4	1934.1	2063.0	2196.1	2333.4	2474.8
7	1687.3	1807.7	1932.4	2061.2	2194.2	2331.4	2472.7
8	1685.0	1805.2	1930.5	2058.9	2191.5	2328.3	2469.2
9	1684.5	1804.6	1928.8	2057.2	2189.7	2326.4	2467.3
10	1682.8	1802.8	1927.0	2055.3	2187.7	2324.4	2465.1
11	1681.8	1801.7	1925.9	2054.1	2186.5	2323.1	2463.8
12	1681.9	1801.6	1925.4	2054.0	2186.3	2322.4	2462.9
13	1680.8	1800.7	1924.5	2053.0	2184.5	2321.2	2461.4
14	1679.5	1799.2	1923.1	2051.1	2183.2	2319.6	2459.9
15	1679.7	1794.7	1921.0	2049.4	2183.1	2316.7	2462.7
16	1675.6	1794.2	1916.9	2043.8	2174.7	2309.6	2448.7
17	1672.5	1791.1	1913.8	2040.5	2171.3	2306.2	2445.2
18	1663.7	1781.3	1903.0	2028.7	2158.5	2292.2	2430.0
19	1660.5	1778.1	1899.6	2025.2	2154.8	2288.5	2426.2
20	1658.7	1776.1	1897.6	2023.1	2152.7	2286.3	2423.9
21	1656.6	1774.1	1895.5	2021.0	2150.5	2284.1	2421.7
22	1655.4	1772.4	1893.4	2018.4	2147.4	2280.5	2417.5
23	1653.5	1770.4	1891.3	2016.3	2145.3	2278.3	2415.3
24	1651.7	1768.6	1889.5	2014.4	2143.3	2276.3	2413.2
25	1650.4	1767.2	1888.0	2012.9	2141.7	2274.6	2411.5

TABLE 11(b) (CONTINUED)

CONFIG	Z=31	Z=32	Z=33	Z=34	Z=35	Z=36	Z=37
26	1651.0	1767.9	1888.7	2013.2	2141.9	2275.2	2411.2
27	1649.5	1766.1	1886.8	2011.2	2140.0	2272.7	2409.2
28	1648.1	1764.7	1885.2	2009.8	2138.4	2271.0	2407.6
29	1647.5	1765.0	1884.9	2008.2	2138.6	2269.1	2408.6
30	1667.6	1785.9	1908.4	2034.9	2165.5	2300.2	2438.9
31	1664.9	1783.1	1905.5	2031.9	2162.4	2297.0	2435.7
32	1655.0	1772.5	1893.8	2019.0	2148.4	2281.9	2419.3
33	1651.8	1769.0	1890.3	2015.5	2144.8	2278.1	2415.5
34	1650.0	1767.2	1888.3	2013.5	2142.7	2276.0	2413.3
35	1648.0	1765.1	1886.2	2011.4	2140.6	2273.8	2411.1
36	1646.7	1763.4	1884.1	2008.8	2137.5	2270.2	2406.9
37	1644.8	1761.5	1882.1	2006.7	2135.4	2268.1	2404.7
38	1643.1	1759.7	1880.2	2004.8	2133.4	2266.0	2402.6
39	1641.9	1758.5	1878.8	2003.3	2131.8	2264.4	2400.9
40	1642.4	1759.1	1879.3	2003.7	2131.8	2264.5	2400.8
41	1640.9	1757.1	1877.5	2001.7	2130.1	2262.4	2398.7
42	1639.5	1755.3	1876.1	2000.3	2128.5	2260.8	2397.0
43	1641.3	1755.9	1875.2	1998.9	2128.9	2260.2	2395.5
44	1700.5	1822.1	1947.9	2078.0	2212.2	2350.7	2493.4
45	1671.7	1790.2	1912.8	2039.5	2170.2	2305.1	2444.0
46	1663.8	1782.0	1904.3	2030.7	2161.2	2295.7	2434.3
47	1698.0	1819.5	1945.1	2075.0	2209.1	2347.4	2490.0
48	1669.7	1788.1	1910.6	2037.2	2167.9	2302.7	2441.5
49	1661.9	1780.1	1902.3	2028.6	2159.0	2293.5	2432.0
50	1699.5	1811.1	1935.9	2064.9	2197.9	2335.2	2476.6

TABLE 11(b) (CONTINUED)

CONFIG	Z=31	Z=32	Z=33	Z=34	Z=35	Z=36	Z=37
51*	1661.5	1779.0	1900.5	2026.0	2155.5	2289.1	2426.7
52*	1653.7	1770.9	1892.0	2017.3	2146.5	2279.6	2417.1
53	1688.6	1809.1	1933.3	2062.5	2195.6	2332.8	2474.2
54*	1659.4	1776.3	1898.2	2023.5	2153.1	2286.6	2424.2
55*	1651.6	1768.7	1889.3	2015.0	2144.1	2277.3	2414.6
56	1686.1	1806.5	1931.1	2059.9	2192.8	2329.9	2471.2
57	1657.9	1775.2	1896.5	2022.0	2151.4	2284.8	2422.3
58	1650.2	1767.2	1888.3	2013.3	2142.5	2275.6	2412.8
59	1684.7	1805.0	1929.5	2058.2	2191.0	2328.0	2469.2
60	1657.2	1774.5	1895.8	2021.1	2150.6	2283.9	2421.4
61	1649.5	1766.5	1887.5	2012.5	2141.6	2274.7	2411.9
62	1683.5	1803.5	1927.7	2056.0	2188.5	2325.1	2465.8
63	1654.3	1771.2	1892.1	2016.9	2145.9	2278.8	2415.7
64	1646.6	1763.1	1883.7	2008.3	2137.0	2269.6	2406.2
65	1682.0	1802.0	1926.1	2054.3	2186.7	2323.3	2464.0
66*	1653.8	1770.6	1891.5	2016.4	2145.2	2278.1	2415.0
67*	1646.0	1762.6	1883.1	2007.7	2136.3	2268.9	2405.5
68	1680.4	1800.3	1924.3	2052.5	2184.8	2321.3	2461.9
69	1652.8	1769.5	1890.4	2015.3	2144.1	2277.0	2413.9
70	1645.1	1761.6	1882.1	2006.7	2135.2	2267.8	2404.4
71	1679.5	1799.3	1923.3	2051.4	2183.7	2320.1	2460.7
72	1652.4	1769.2	1890.0	2014.9	2143.7	2276.5	2413.4
73	1644.7	1761.2	1881.7	2006.3	2134.8	2267.3	2403.9
74	1679.6	1799.4	1922.9	2051.3	2183.2	2319.3	2459.8
75*	1652.5	1768.9	1889.7	2014.8	2142.8	2275.2	2411.5

TABLE 11(b) (CONTINUED)

CONFIG	Z=31	Z=32	Z=33	Z=34	Z=35	Z=36	Z=37
76*	1644.4	1760.7	1881.5	2005.5	2133.7	2265.6	2402.8
77	1678.5	1796.1	1922.0	2049.9	2182.0	2318.2	2458.5
78*	1650.9	1767.4	1888.1	2012.4	2141.0	2273.8	2410.3
79*	1643.3	1759.6	1879.8	2004.3	2132.4	2264.7	2401.0
80	1677.3	1796.9	1920.6	2048.5	2180.5	2316.7	2456.9
81	1650.1	1766.6	1887.0	2011.7	2140.3	2272.8	2409.2
82	1642.4	1758.6	1878.9	2003.2	2131.3	2263.7	2399.8
83	1675.6	1796.6	1920.3	2047.3	2179.4	2317.0	2457.1
84*	1648.3	1764.9	1893.3	2013.8	2135.8	2268.1	2408.7
85*	1642.5	1750.5	1877.3	1999.8	2130.1	2266.9	2397.5

TABLE 11(b) (CONTINUED)

CONFIG	Z=38	Z=39	Z=40	Z=41	Z=42	Z=43	Z=44
1	2666.6	2818.5	2974.6	3135.0	3299.6	3468.4	3641.4
2	2645.3	2796.7	2952.2	3112.0	3276.0	3444.2	3616.6
3	2641.3	2792.4	2947.8	3107.4	3271.3	3439.3	3611.6
4	2626.1	2776.1	2930.2	3088.5	3251.0	3417.6	3588.3
5	2623.6	2773.5	2927.6	3085.	3248.1	3414.6	3585.3
6	2620.4	2770.2	2924.2	3082.3	3244.6	3411.1	3581.7
7	2618.2	2767.9	2921.8	3079.9	3242.1	3408.5	3579.1
8	2614.2	2763.4	2915.8	3074.3	3236.0	3401.8	3571.7
9	2612.3	2761.4	2914.8	3072.2	3233.8	3399.5	3569.4
10	2610.1	2759.1	2912.4	3069.8	3231.3	3397.0	3566.8
11	2608.7	2757.3	2910.9	3068.3	3229.7	3395.4	3565.2
12	2607.3	2756.5	2909.3	3066.6	3227.4	3393.4	3563.3
13	2606.5	2755.3	2907.6	3064.7	3226.1	3391.7	3560.2
14	2604.5	2753.1	2906.1	3063.0	3224.1	3389.3	3558.8
15	2608.3	2750.1	2904.3	3060.6	3227.1	3386.6	3558.3
16	2591.9	2739.1	2890.4	3045.8	3205.3	3368.9	3536.5
17	2588.3	2735.4	2886.7	3042.0	3201.4	3364.9	3532.4
18	2571.8	2717.7	2867.6	3021.6	3179.6	3341.6	3507.6
19	2567.9	2713.7	2863.5	3017.3	3175.2	3337.1	3503.0
20	2565.5	2711.2	2860.9	3014.7	3172.5	3334.3	3500.2
21	2563.3	2708.9	2858.6	3012.4	3170.1	3331.9	3497.7
22	2558.6	2703.7	2852.8	3005.9	3163.0	3324.1	3489.3
23	2556.3	2701.4	2850.4	3003.5	3160.6	3321.6	3486.7
24	2554.2	2699.1	2848.1	3001.1	3158.1	3319.1	3484.2
25	2552.4	2697.3	2846.2	2999.1	3156.1	3317.1	3482.0

TABLE 11(b) (CONTINUED)

CONFIG	Z=38	Z=39	Z=40	Z=41	Z=42	Z=43	Z=44
26	2631.7	2696.7	2845.2	2998.2	3154.8	3315.2	3479.7
27	2549.9	2694.5	2843.0	2995.6	3152.3	3312.6	3477.9
28	2548.1	2692.7	2841.3	2993.8	3150.4	3311.0	3475.5
29	2546.9	2693.0	2841.1	2994.1	3150.4	3310.5	3473.4
30	2681.9	2726.7	2879.7	3034.8	3194.0	3357.3	3524.6
31	2678.5	2725.3	2876.3	3031.3	3190.4	3353.6	3520.9
32	2660.8	2706.4	2858.9	3009.6	3167.2	3328.9	3494.6
33	2656.9	2702.3	2851.8	3005.3	3162.9	3324.4	3490.0
34	2654.6	2700.0	2849.3	3002.8	3160.2	3321.7	3487.3
35	2652.3	2697.7	2847.0	3000.4	3157.9	3319.3	3484.8
36	2647.7	2692.4	2841.2	2994.0	3150.8	3311.6	3476.4
37	2645.4	2690.2	2838.8	2991.5	3148.3	3309.1	3473.8
38	2643.3	2687.9	2836.6	2989.2	3146.9	3306.6	3471.3
39	2641.5	2686.1	2834.7	2987.3	3143.9	3304.5	3469.2
40	2640.8	2685.4	2833.7	2986.0	3142.6	3303.0	3466.8
41	2638.8	2683.1	2831.5	2983.8	3140.0	3300.4	3464.9
42	2637.3	2681.5	2829.8	2982.0	3138.3	3298.5	3462.7
43	2636.1	2680.3	2828.3	2980.4	3135.2	3297.0	3459.9
44	2640.3	2791.4	2946.8	3106.4	3270.2	3438.2	3610.5
45	2637.0	2734.1	2885.3	3040.6	3199.9	3363.3	3530.8
46	2677.0	2723.3	2874.7	3029.7	3188.7	3351.8	3519.0
47	2636.7	2787.7	2942.9	3102.4	3266.0	3433.9	3606.0
48	2584.3	2731.3	2882.6	3037.8	3197.1	3360.4	3527.9
49	2674.7	2721.4	2872.2	3027.1	3186.0	3349.1	3516.2
50	2622.2	2772.0	2925.9	3084.0	3246.3	3412.8	3583.4

TABLE 11(b) (CONTINUED)

CONFIG	Z=38	Z=39	Z=40	Z=41	Z=42	Z=43	Z=44
51*	2566.4	2714.1	2863.8	3017.6	3175.4	3337.2	3503.0
52*	2558.4	2703.9	2853.3	3006.8	3164.3	3325.8	3491.3
53	2619.7	2769.5	2923.3	3081.4	3243.6	3409.9	3580.5
54*	2565.7	2711.3	2861.0	3014.7	3172.4	3334.1	3499.9
55*	2555.9	2701.2	2853.5	3003.9	3161.3	3322.8	3488.2
56	2616.7	2766.3	2920.1	3078.1	3240.2	3406.6	3577.1
57	2563.8	2709.4	2859.0	3012.6	3170.3	3332.0	3497.7
58	2554.0	2699.3	2848.6	3001.9	3159.3	3320.7	3486.1
59	2614.3	2764.1	2917.9	3075.8	3237.8	3404.1	3574.5
60	2562.9	2708.4	2857.9	3011.5	3169.2	3330.8	3496.5
61	2553.0	2698.3	2847.6	3000.9	3158.1	3319.5	3484.9
62	2610.7	2759.3	2913.0	3070.4	3231.9	3397.6	3567.4
63	2555.7	2701.5	2850.6	3003.6	3160.6	3321.6	3486.6
64	2546.9	2691.5	2840.2	2992.9	3149.6	3310.3	3475.0
65	2603.9	2757.3	2911.0	3068.3	3229.8	3395.4	3565.1
66*	2556.0	2700.9	2849.9	3002.2	3159.8	3320.7	3485.7
67*	2546.1	2690.8	2839.5	2992.0	3148.8	3309.4	3474.0
68	2606.7	2755.7	2908.3	3066.0	3227.4	3392.9	3562.6
69	2554.8	2699.7	2848.5	3001.5	3158.4	3319.4	3484.4
70	2545.0	2689.5	2838.2	2990.8	3147.5	3308.1	3472.8
71	2605.4	2754.3	2907.4	3064.5	3225.9	3391.4	3561.0
72	2554.3	2699.2	2848.0	3001.0	3157.9	3318.8	3483.8
73	2544.5	2689.1	2837.7	2990.3	3146.9	3307.5	3472.2
74	2604.3	2753.2	2905.7	3062.8	3223.7	3389.2	3558.4
75*	2552.3	2697.3	2846.1	2999.0	3155.0	3314.9	3479.4

TABLE 11(b) (CONCLUDED)

CONFIG	Z=38	Z=39	Z=40	Z=41	Z=42	Z=43	Z=44
76*	2543.5	2687.4	2835.6	2989.0	3143.7	3304.6	3468.2
77	2603.0	2751.8	2904.4	3061.3	3222.3	3387.6	3556.9
78*	2551.2	2695.7	2843.9	2996.6	3152.6	3313.4	3478.3
79*	2540.7	2685.4	2833.7	2986.0	3141.7	3302.5	3467.0
80	2601.4	2749.9	2902.7	3059.5	3220.5	3385.6	3554.8
81	2549.8	2694.6	2843.0	2995.6	3152.1	3312.6	3477.3
82	2540.1	2684.3	2832.6	2985.0	3141.1	3301.3	3465.7
83	2599.8	2748.0	2902.2	3059.4	3219.9	3384.8	3553.8
84*	2550.0	2688.2	2845.4	3001.3	3148.9	3309.7	3476.8
85*	2536.3	2684.1	2834.0	2986.3	3138.7	3302.7	3464.8

TABLE 12(a)–CONFIGURATION LIST FOR 13 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S	2S	2P	3S	3P	3D	4S	4P	4D	4F	5S	5P	5D	5F	6S	6P	6D	7S
GROUND CONFIGURATION																			
1	ODD	2	2	6	2	1													
ONE-ELECTRON EXCITED CONFIGURATIONS																			
2		2	2	6	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0
3		2	2	6	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0
4	ODD	2	2	6	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5		2	2	6	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
6	ODD	2	2	6	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7		2	2	6	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0
8	ODD	2	2	6	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0
9		2	2	6	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0
10	ODD	2	2	6	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0
11		2	2	6	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0
12	ODD	2	2	6	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0
13		2	2	6	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0
14		2	2	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1
15		2	2	6	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
16	ODD	2	2	6	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
17	ODD	2	2	6	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0
18		2	2	6	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
19	ODD	2	2	6	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
20		2	2	6	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0
21	ODD	2	2	6	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0
22		2	2	6	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0
23	ODD	2	2	6	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0
24		2	2	6	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0
25	ODD	2	2	6	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0
26		2	2	6	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0
27	ODD	2	2	6	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0
28	ODD	2	2	6	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
TWO-ELECTRON EXCITED CONFIGURATIONS																			
29	ODD	2	2	6	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
30		2	2	6	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0
31		2	2	6	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0
32	ODD	2	2	6	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0
33		2	2	6	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0
34		2	2	6	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0
35	ODD	2	2	6	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0
36	ODD	2	2	6	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0
37	ODD	2	2	6	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0
38		2	2	6	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0
39		2	2	6	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0
40		2	2	6	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
41	ODD	2	2	6	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0
42	ODD	2	2	6	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0
43	ODD	2	2	6	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0
44		2	2	6	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0
45		2	2	6	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0
46		2	2	6	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0
47	ODD	2	2	6	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0

TABLE 12(a) (CONCLUDED)

49	DDD	2	2	6	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0
51		2	2	6	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0
53	DDD	2	2	6	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0
55	DDD	2	2	6	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0
57		2	2	6	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0
59	DDD	2	2	6	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0
61	DDD	2	2	6	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0
63		2	2	6	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0
65	DDD	2	2	6	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0
67		2	2	6	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1

TABLE 12(b)–13 ELECTRONS

CONFIG	Z=26	Z=27	Z=28	Z=29	Z=30	Z=31	Z=32
1	1176.1	1274.0	1385.0	1497.3	1613.0	1733.1	1957.4
2	1173.7	1270.3	1379.2	1494.4	1609.9	1729.3	1854.0
3	1171.2	1273.2	1379.5	1490.1	1605.0	1724.1	1847.5
4	1169.7	1271.7	1377.0	1488.4	1603.2	1722.2	1845.6
5	1168.7	1270.6	1376.7	1487.2	1601.9	1720.9	1844.2
6	1167.9	1269.7	1375.8	1486.2	1600.8	1719.8	1843.0
7	1167.2	1268.8	1374.6	1484.7	1599.1	1717.7	1840.6
8	1166.6	1268.1	1373.9	1483.9	1598.3	1716.8	1839.7
9	1165.9	1267.4	1373.1	1483.1	1597.4	1715.9	1838.7
10	1165.6	1267.0	1372.7	1482.7	1596.9	1715.4	1838.2
11	1165.2	1266.5	1372.1	1481.9	1596.0	1714.3	1836.9
12	1164.9	1266.2	1371.7	1481.5	1595.6	1713.9	1836.5
13	1164.6	1265.8	1371.3	1481.1	1595.1	1713.4	1835.9
14	1164.1	1265.3	1370.7	1480.4	1594.3	1712.5	1834.9
15	1173.4	1274.6	1382.8	1494.0	1609.6	1729.4	1853.6
16	1171.4	1272.7	1380.6	1491.5	1606.8	1726.5	1850.6
17	1167.7	1268.4	1375.5	1485.0	1600.5	1719.4	1842.6
18	1165.8	1267.5	1373.4	1483.7	1598.3	1717.1	1840.2
19	1163.6	1265.2	1371.0	1481.2	1595.6	1714.3	1837.4
20	1162.4	1263.9	1369.6	1479.7	1594.0	1712.6	1835.5
21	1163.2	1264.5	1370.0	1479.9	1594.0	1712.3	1834.9
22	1161.7	1262.9	1368.4	1478.2	1592.2	1710.5	1833.1
23	1160.2	1261.3	1366.8	1476.4	1590.4	1708.6	1831.1
24	1159.4	1260.5	1365.8	1475.4	1589.3	1707.4	1829.8
25	1160.4	1261.7	1367.0	1476.3	1590.4	1708.5	1830.5

TABLE 12(b) (CONTINUED)

CONFIG	Z=26	Z=27	Z=28	Z=29	Z=30	Z=31	Z=32
26	1159.5	1260.1	1365.7	1475.3	1588.9	1706.8	1829.0
27	1158.3	1259.2	1364.5	1473.9	1587.5	1705.4	1827.7
28	1164.4	1258.8	1364.7	1476.1	1585.1	1706.4	1828.7
29	1170.6	1272.9	1379.6	1490.6	1605.9	1725.6	1849.6
30	1169.7	1271.5	1378.0	1488.8	1604.0	1723.5	1847.4
31	1168.9	1271.1	1377.6	1488.4	1603.6	1723.1	1847.0
32	1167.1	1269.1	1375.5	1486.1	1601.1	1720.5	1844.2
33	1166.1	1267.7	1373.7	1483.9	1598.4	1717.1	1840.2
34	1165.3	1266.9	1372.8	1483.0	1597.4	1716.2	1839.2
35	1164.0	1265.5	1371.2	1481.3	1595.6	1714.2	1837.1
36	1164.4	1265.9	1371.7	1481.9	1596.3	1714.9	1837.9
37	1163.5	1265.0	1370.8	1480.9	1595.3	1714.0	1836.9
38	1162.4	1263.8	1369.6	1479.4	1593.6	1712.2	1835.0
39	1162.0	1263.5	1369.2	1479.2	1593.5	1712.1	1834.9
40	1161.4	1262.8	1368.5	1478.5	1592.7	1711.3	1834.1
41	1160.2	1261.5	1367.0	1476.9	1591.0	1709.4	1832.1
42	1161.0	1262.4	1368.0	1477.9	1592.0	1710.5	1833.2
43	1160.2	1261.5	1367.1	1477.0	1591.2	1709.6	1832.3
44	1159.2	1260.4	1365.8	1475.5	1589.6	1707.9	1830.5
45	1161.0	1263.0	1369.4	1478.1	1592.1	1710.3	1832.7
46	1161.0	1262.2	1367.6	1477.2	1591.2	1709.3	1831.8
47	1160.0	1261.0	1366.3	1475.8	1589.6	1707.7	1830.0
48	1160.5	1261.6	1367.0	1476.6	1590.5	1708.6	1831.0
49	1159.6	1260.7	1366.0	1475.6	1589.5	1707.6	1830.0
50	1158.7	1259.6	1364.8	1474.3	1588.1	1706.0	1828.3

TABLE 12(b) (CONTINUED)

CONFIG	Z=26	Z=27	Z=28	Z=29	Z=30	Z=31	Z=32
51	1158.9	1260.9	1365.2	1474.8	1588.6	1706.6	1829.0
52	1158.1	1260.1	1364.4	1473.9	1587.7	1705.7	1828.0
53	1157.2	1259.1	1363.2	1472.5	1586.2	1704.2	1825.3
54	1158.2	1259.2	1364.4	1473.9	1587.6	1705.6	1827.8
55	1157.4	1258.3	1363.5	1472.9	1586.7	1704.6	1826.9
56	1156.6	1257.3	1362.4	1471.7	1585.3	1703.1	1825.2
57	1159.1	1260.7	1365.6	1474.7	1588.1	1706.8	1829.2
58	1158.6	1259.4	1364.7	1474.1	1587.7	1705.4	1828.1
59	1157.6	1258.4	1363.4	1472.8	1586.3	1704.1	1826.2
60	1158.6	1259.1	1364.5	1473.9	1587.5	1705.3	1827.2
61	1157.4	1258.4	1363.5	1472.9	1586.4	1704.1	1826.4
62	1156.7	1257.4	1362.5	1471.6	1585.0	1702.7	1824.7
63	1157.3	1258.0	1363.0	1472.3	1585.9	1703.6	1825.7
64	1156.4	1257.1	1362.1	1471.4	1585.0	1703.7	1824.7
65	1155.6	1256.2	1361.1	1470.3	1583.7	1701.3	1823.2
66	1158.2	1259.0	1364.7	1471.1	1585.6	1706.8	1830.5
67	1156.6	1257.9	1363.3	1469.9	1584.2	1704.6	1826.4
68	1155.6	1257.5	1361.1	1470.4	1585.1	1702.1	1822.8

TABLE 12(b) (CONTINUED)

CONFIG	Z=33	Z=34	Z=35	Z=36	Z=37	Z=38	Z=39
1	1986.2	2110.2	2256.6	2398.3	2544.4	2694.7	2849.5
2	1982.6	2116.5	2252.7	2394.2	2540.1	2690.3	2844.9
3	1975.7	2107.3	2243.5	2384.1	2529.9	2679.0	2831.4
4	1977.2	2105.2	2241.4	2381.9	2526.6	2675.7	2829.0
5	1971.7	2103.6	2239.7	2380.1	2524.8	2673.8	2827.1
6	1970.5	2102.3	2238.4	2378.8	2523.5	2672.4	2825.6
7	1967.7	2099.1	2234.6	2374.7	2519.9	2667.3	2820.0
8	1966.8	2098.1	2233.9	2373.7	2517.8	2666.2	2819.9
9	1965.8	2097.1	2232.7	2372.6	2516.7	2665.1	2817.7
10	1965.2	2096.5	2232.1	2371.9	2515.9	2664.3	2816.9
11	1963.7	2094.8	2230.1	2369.7	2513.6	2661.6	2814.0
12	1963.7	2094.3	2229.6	2369.2	2513.0	2661.1	2813.4
13	1962.7	2093.9	2229.0	2368.6	2512.4	2660.4	2812.7
14	1961.5	2092.6	2227.5	2366.9	2510.5	2658.4	2810.5
15	1968.2	2115.6	2252.2	2393.8	2539.6	2689.8	2844.4
16	1970.0	2111.7	2248.7	2390.1	2535.8	2685.8	2840.2
17	1970.1	2101.9	2237.0	2378.2	2523.9	2671.7	2824.0
18	1967.6	2099.3	2235.3	2375.5	2520.0	2668.8	2821.0
19	1964.6	2096.9	2232.1	2372.2	2516.7	2665.4	2818.4
20	1962.7	2094.1	2229.9	2369.9	2514.3	2662.9	2815.8
21	1961.9	2093.0	2228.4	2368.0	2511.9	2660.1	2812.6
22	1959.9	2091.0	2226.3	2365.9	2509.7	2657.9	2810.2
23	1957.6	2088.8	2224.0	2363.5	2507.3	2655.4	2807.7
24	1956.5	2087.4	2222.6	2362.1	2505.8	2653.8	2806.0
25	1956.8	2087.4	2222.7	2362.8	2506.6	2653.5	2806.4

TABLE 12(b) (CONTINUED)

CONFIG	Z=33	Z=34	Z=35	Z=36	Z=37	Z=38	Z=39
25	1958.4	2086.6	2221.8	2361.0	2504.4	2652.0	2803.7
27	1954.0	2084.2	2219.7	2358.9	2502.2	2650.0	2801.9
28	1954.4	2080.2	2221.4	2358.3	2501.5	2649.5	2801.2
29	1953.0	2110.4	2247.6	2389.0	2534.6	2684.7	2839.0
30	1975.5	2107.1	2245.0	2386.2	2531.7	2681.5	2835.7
31	1975.2	2107.7	2244.5	2385.7	2531.2	2681.1	2835.2
32	1972.2	2104.5	2241.2	2382.2	2527.6	2677.2	2831.2
33	1967.6	2099.2	2235.1	2375.2	2519.7	2669.4	2821.4
34	1966.6	2098.2	2234.0	2374.2	2519.6	2667.3	2820.3
35	1964.5	2095.8	2231.6	2371.5	2515.8	2664.3	2817.2
36	1965.2	2096.7	2232.5	2372.6	2517.0	2665.7	2818.6
37	1964.1	2095.7	2231.5	2371.5	2515.0	2664.5	2817.4
38	1963.1	2093.4	2229.1	2369.0	2513.2	2661.7	2814.5
39	1962.1	2093.5	2229.2	2369.2	2513.5	2662.1	2814.9
40	1961.2	2092.7	2228.3	2368.3	2512.6	2661.1	2814.0
41	1959.1	2090.4	2225.9	2365.7	2509.9	2658.3	2811.0
42	1960.3	2091.6	2227.2	2367.1	2511.2	2659.7	2812.5
43	1959.3	2090.6	2226.2	2366.1	2510.3	2658.7	2811.4
44	1957.3	2088.5	2223.9	2363.6	2507.7	2656.0	2808.5
45	1959.5	2090.6	2225.9	2365.3	2509.1	2657.1	2809.4
46	1958.5	2089.5	2224.7	2364.2	2508.0	2656.0	2808.3
47	1956.6	2087.4	2222.5	2361.9	2505.5	2653.4	2805.6
48	1957.7	2088.7	2223.6	2363.3	2507.0	2655.0	2807.3
49	1956.7	2087.5	2222.7	2362.2	2505.9	2653.8	2806.0
50	1954.9	2085.6	2220.6	2360.0	2503.5	2651.4	2803.5

TABLE 12(b) (CONTINUED)

CONFIG	Y=33	Y=34	Y=35	Y=36	Y=37	Y=38	Y=39
51	1955.6	2086.4	2221.5	2360.9	2504.6	2653.4	2804.6
52	1954.6	2085.4	2220.5	2359.9	2503.5	2651.4	2803.5
53	1952.8	2083.5	2218.4	2357.7	2501.1	2648.9	2800.9
54	1954.1	2085.1	2220.2	2359.5	2503.1	2650.9	2803.0
55	1953.4	2084.1	2219.1	2358.4	2502.0	2649.8	2801.9
56	1951.6	2082.2	2217.1	2356.3	2499.7	2647.4	2799.4
57	1954.0	2085.4	2221.0	2359.3	2502.8	2650.9	2803.5
58	1954.2	2084.2	2219.2	2358.6	2502.2	2649.7	2801.8
59	1952.3	2082.7	2217.5	2356.6	2499.8	2647.3	2799.0
60	1953.6	2084.5	2219.4	2358.2	2501.9	2649.2	2801.3
61	1952.6	2083.2	2218.2	2357.1	2500.5	2647.2	2799.6
62	1951.0	2081.4	2216.1	2355.1	2498.4	2645.8	2797.5
63	1952.1	2082.6	2217.3	2356.4	2499.7	2647.3	2799.0
64	1951.0	2081.5	2216.3	2355.3	2498.5	2646.1	2797.9
65	1949.4	2079.7	2214.4	2353.3	2496.4	2643.8	2795.5
66	1951.0	2081.1	2219.3	2356.8	2494.0	2641.0	2801.0
67	1949.5	2083.1	2218.4	2355.3	2501.0	2646.1	2799.2
68	1948.3	2080.9	2215.0	2352.9	2496.6	2644.2	2795.2

TABLE 12(b) (CONTINUED)

CONFIG	J=40	J=41	J=42	J=43	J=44	J=45	J=46
1	3009.5	3171.0	3339.6	3511.7	3688.1	3869.8	4053.8
2	3007.7	3165.9	3334.5	3506.4	3682.6	3867.1	4049.6
3	2999.1	3161.0	3327.3	3497.8	3682.5	3861.7	4025.1
4	2996.6	3148.5	3314.7	3485.1	3659.8	3838.8	4022.1
5	2994.4	3146.5	3312.6	3483.0	3657.7	3836.7	4019.9
6	2993.2	3145.0	3311.1	3481.4	3656.1	3835.0	4018.3
7	2977.0	3138.3	3303.8	3473.5	3647.5	3825.8	4009.4
8	2978.0	3137.1	3302.5	3472.2	3646.2	3824.5	4007.0
9	2974.4	3135.7	3301.2	3470.9	3644.8	3823.0	4005.5
10	2973.8	3134.0	3300.7	3469.9	3643.8	3822.0	4004.5
11	2971.4	3131.4	3296.5	3465.8	3639.4	3817.2	3999.3
12	2969.9	3130.8	3295.8	3465.1	3638.7	3816.5	3998.6
13	2969.2	3130.0	3295.0	3464.3	3637.9	3815.7	3997.7
14	2968.0	3127.6	3292.3	3461.4	3634.7	3812.3	3994.1
15	3003.2	3166.4	3334.0	3505.8	3682.0	3862.6	4047.4
16	2998.0	3161.9	3329.3	3501.0	3677.0	3857.4	4042.1
17	2992.4	3144.2	3310.2	3480.4	3655.0	3833.8	4017.0
18	2979.3	3141.0	3306.9	3477.1	3651.5	3830.3	4013.3
19	2978.7	3137.2	3303.1	3473.2	3647.7	3826.4	4009.4
20	2977.0	3134.4	3300.2	3470.3	3644.6	3823.2	4006.1
21	2968.3	3130.3	3295.5	3465.0	3638.9	3816.8	3999.1
22	2966.9	3127.8	3293.0	3462.4	3636.1	3814.0	3996.3
23	2964.0	3125.1	3290.2	3459.5	3633.1	3811.0	3993.1
24	2962.5	3123.3	3288.3	3457.6	3631.2	3809.0	3991.1
25	2961.3	3122.5	3287.2	3456.7	3629.1	3807.2	3989.0

TABLE 12(b) (CONTINUED)

CONFIG	Z=40	Z=41	Z=42	Z=43	Z=44	Z=45	Z=46
26	2960.0	3120.8	3286.1	3453.7	3627.6	3804.6	3986.8
27	2958.0	3118.5	3283.7	3452.2	3625.7	3802.7	3984.4
28	2956.9	3118.3	3282.8	3448.8	3618.1	3769.6	3981.4
29	2967.7	3160.7	3323.0	3490.7	3675.7	3856.9	4040.7
30	2964.3	3157.1	3324.3	3485.9	3671.7	3851.9	4036.4
31	2963.8	3156.6	3323.8	3485.3	3671.2	3851.3	4035.9
32	2959.6	3152.3	3319.3	3480.6	3666.3	3846.3	4030.6
33	2978.8	3140.4	3306.3	3476.4	3650.8	3829.5	4012.5
34	2977.6	3139.2	3305.0	3475.1	3649.5	3829.2	4011.2
35	2974.3	3135.8	3301.6	3471.5	3645.7	3824.3	4007.1
36	2975.9	3137.4	3303.1	3473.2	3647.5	3826.1	4009.0
37	2974.7	3136.1	3301.9	3471.9	3646.2	3824.8	4007.6
38	2971.6	3132.9	3298.5	3468.4	3642.6	3821.0	4003.7
39	2972.0	3133.5	3299.2	3469.2	3643.4	3822.0	4004.8
40	2971.1	3132.5	3298.2	3468.1	3642.4	3820.9	4003.7
41	2967.9	3129.2	3294.7	3464.6	3638.7	3817.1	3999.7
42	2969.5	3130.9	3296.4	3466.3	3640.5	3819.0	4001.7
43	2968.4	3129.8	3295.3	3465.2	3639.4	3817.8	4000.6
44	2965.4	3126.6	3292.0	3461.8	3635.8	3814.1	3996.7
45	2966.0	3126.8	3291.6	3461.7	3634.9	3812.8	3995.0
46	2964.9	3125.7	3290.8	3460.1	3633.7	3811.5	3993.7
47	2962.0	3122.7	3287.6	3456.8	3630.3	3808.1	3990.0
48	2963.7	3124.5	3289.6	3458.9	3632.4	3810.2	3992.4
49	2962.6	3123.7	3289.3	3457.6	3631.1	3808.9	3991.0
50	2959.8	3120.4	3285.3	3454.5	3627.8	3805.5	3987.4

TABLE 12(b) (CONCLUDED)

CONFIG	Z=40	Z=41	Z=42	Z=43	Z=44	Z=45	Z=46
51	2961.0	3121.7	3286.7	3455.9	3629.4	3807.1	3989.1
52	2959.9	3120.6	3285.6	3454.7	3628.2	3805.9	3987.8
53	2957.2	3117.7	3282.5	3451.6	3624.9	3802.5	3984.3
54	2959.4	3120.0	3284.9	3454.1	3627.5	3805.2	3987.1
55	2958.2	3118.8	3283.7	3452.8	3626.2	3803.9	3985.8
56	2955.6	3116.0	3280.8	3449.8	3623.1	3800.6	3982.4
57	2958.9	3119.8	3284.0	3453.5	3625.5	3802.6	3985.7
58	2957.6	3118.2	3283.6	3451.9	3624.6	3802.0	3984.6
59	2955.2	3115.4	3280.2	3448.7	3621.9	3799.8	3980.5
60	2957.0	3117.9	3282.1	3451.3	3624.3	3801.2	3983.1
61	2955.9	3116.4	3281.0	3449.7	3622.8	3800.2	3981.5
62	2953.5	3113.6	3278.2	3446.7	3619.9	3797.1	3978.4
63	2955.0	3115.4	3279.9	3448.7	3621.8	3799.1	3980.7
64	2953.8	3114.1	3278.8	3447.5	3620.5	3797.8	3979.3
65	2951.4	3111.5	3275.9	3444.6	3617.4	3794.6	3976.0
66	2954.8	3110.2	3278.0	3447.0	3619.5	3797.3	3983.4
67	2953.8	3113.4	3279.5	3447.7	3620.3	3799.4	3977.0
68	2952.7	3112.1	3274.7	3444.1	3617.0	3794.2	3973.7

TABLE 13(a)–CONFIGURATION LIST FOR 14 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S	2S	2P	3S	3P	3D	4S	4P	4D	4F	5S	5P	5D	5F	6S	6P	6D	7S
GROUND CONFIGURATION																			
1		2	2	6	2	2													
ONE-ELECTRON EXCITED CONFIGURATIONS																			
2	ODD	2	2	6	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0
3	ODD	2	2	6	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0
4		2	2	6	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0
5	ODD	2	2	6	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0
6		2	2	6	2	1	0	0	0	0	1	0	0	0	0	0	0	0	0
7	ODD	2	2	6	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0
8		2	2	6	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0
9	ODD	2	2	6	2	1	0	0	0	0	0	0	0	1	0	0	0	0	0
10		2	2	6	2	1	0	0	0	0	0	0	0	0	1	0	0	0	0
11	ODD	2	2	6	2	1	0	0	0	0	0	0	0	0	0	1	0	0	0
12		2	2	6	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0
13	ODD	2	2	6	2	1	0	0	0	0	0	0	0	0	0	0	0	1	0
14	ODD	2	2	6	2	1	0	0	0	0	0	0	0	0	0	0	0	0	1
15	ODD	2	2	6	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0
16		2	2	6	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0
17		2	2	6	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0
18	ODD	2	2	6	1	2	0	0	1	0	0	0	0	0	0	0	0	0	0
19		2	2	6	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0
20	ODD	2	2	6	1	2	0	0	0	0	1	0	0	0	0	0	0	0	0
21		2	2	6	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0
22	ODD	2	2	6	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0
23		2	2	6	1	2	0	0	0	0	0	0	0	1	0	0	0	0	0
24	ODD	2	2	6	1	2	0	0	0	0	0	0	0	0	1	0	0	0	0
25		2	2	6	1	2	0	0	0	0	0	0	0	0	0	1	0	0	0
26	ODD	2	2	6	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0
27		2	2	6	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0
28		2	2	6	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1
TWO-ELECTRON EXCITED CONFIGURATIONS																			
29		2	2	6	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
30		2	2	6	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0
31	ODD	2	2	6	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0
32		2	2	6	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0
33	ODD	2	2	6	2	0	1	0	0	0	1	0	0	0	0	0	0	0	0
34		2	2	6	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0
35	ODD	2	2	6	2	0	1	0	0	0	0	0	1	0	0	0	0	0	0
36		2	2	6	2	0	1	0	0	0	0	0	0	1	0	0	0	0	0
37	ODD	2	2	6	2	0	1	0	0	0	0	0	0	0	1	0	0	0	0
38		2	2	6	2	0	1	0	0	0	0	0	0	0	0	1	0	0	0
39	ODD	2	2	6	2	0	1	0	0	0	0	0	0	0	0	0	1	0	0
40		2	2	6	2	0	1	0	0	0	0	0	0	0	0	0	0	1	0
41		2	2	6	2	0	1	0	0	0	0	0	0	0	0	0	0	0	1
42		2	2	6	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
43	ODD	2	2	6	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0
44	ODD	2	2	6	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0
45		2	2	6	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
46	ODD	2	2	6	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
47	ODD	2	2	6	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0

TABLE 13(a) (CONCLUDED)

48		2	2	6	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0
49		2	2	6	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0
50		2	2	6	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0
51	0DD	2	2	6	0	2	1	0	1	0	0	0	0	0	0	0	0	0	0
52	0D0	2	2	6	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0
53	00D	2	2	6	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0
54		2	2	6	0	2	1	0	0	1	0	0	0	0	0	0	0	0	0
55		2	2	6	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0
56		2	2	6	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0
57	0D0	2	2	6	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0
58	0D0	2	2	6	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0
59	0D0	2	2	6	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0
60		2	2	6	0	2	1	0	0	0	0	1	0	0	0	0	0	0	0
61		2	2	6	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0
62		2	2	6	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0
63	0D0	2	2	6	0	2	1	0	0	0	0	0	1	0	0	0	0	0	0
64	0D0	2	2	6	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0
65	0D0	2	2	6	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0
66		2	2	6	0	2	1	0	0	0	0	0	0	1	0	0	0	0	0
67		2	2	6	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0
68		2	2	6	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0
69	0D0	2	2	6	0	2	1	0	0	0	0	0	0	0	1	0	0	0	0
70	0D0	2	2	6	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0
71	0D0	2	2	6	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0
72		2	2	6	0	2	1	0	0	0	0	0	0	0	0	1	0	0	0
73		2	2	6	1	1	1	0	0	0	0	0	0	0	0	0	1	0	0
74		2	2	6	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0
75	0D0	2	2	6	0	2	1	0	0	0	0	0	0	0	0	0	1	0	0
76	0D0	2	2	6	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0
77	0D0	2	2	6	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0
78		2	2	6	0	2	1	0	0	0	0	0	0	0	0	0	0	1	0
79	0D0	2	2	6	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1
80	0D0	2	2	6	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1
81		2	2	6	0	2	1	0	0	0	0	0	0	0	0	0	0	0	1

TABLE 13(b)–14 ELECTRONS

CONFIG	Z=28	Z=29	Z=30	Z=31	Z=32	Z=33	Z=34
1	1403.2	1516.6	1634.5	1756.8	1883.5	2014.7	2150.4
2	1400.5	1513.8	1631.5	1753.6	1880.2	2011.2	2146.7
3	1396.0	1508.6	1625.6	1746.9	1872.7	2002.8	2137.5
4	1393.8	1506.3	1623.2	1744.4	1870.1	2000.2	2134.6
5	1391.2	1503.6	1620.4	1741.5	1867.1	1997.0	2131.4
6	1389.7	1501.9	1618.5	1739.6	1865.0	1994.8	2129.1
7	1390.7	1502.7	1619.2	1740.0	1865.1	1994.7	2128.6
8	1388.9	1500.9	1617.3	1738.1	1863.1	1992.6	2126.3
9	1387.1	1499.0	1615.3	1735.9	1861.0	1990.4	2124.1
10	1386.1	1497.9	1614.1	1734.7	1859.6	1988.9	2122.6
11	1387.9	1499.1	1615.8	1736.7	1860.7	1990.0	2123.5
12	1386.5	1498.1	1614.1	1734.4	1859.3	1988.4	2122.4
13	1384.8	1496.7	1612.6	1733.0	1857.7	1986.7	2120.2
14	1382.3	1491.0	1616.8	1737.9	1854.5	1989.2	2128.3
15	1400.0	1513.3	1630.9	1753.0	1879.6	2010.6	2146.1
16	1397.7	1510.8	1628.3	1750.2	1876.6	2007.4	2142.7
17	1393.3	1505.7	1622.5	1743.7	1869.3	1999.3	2133.7
18	1391.1	1503.5	1620.2	1741.3	1866.7	1996.6	2130.9
19	1388.6	1500.8	1617.4	1738.4	1863.8	1993.6	2127.7
20	1387.1	1499.2	1615.6	1736.5	1861.8	1991.4	2125.5
21	1388.1	1500.0	1616.3	1736.9	1861.9	1991.3	2125.0
22	1386.4	1498.2	1614.4	1735.0	1859.9	1989.2	2123.0
23	1384.6	1496.4	1612.5	1733.0	1857.8	1987.0	2120.6
24	1383.7	1495.3	1611.3	1731.7	1856.5	1985.7	2119.2
25	1385.2	1496.4	1613.1	1733.1	1857.4	1986.7	2120.3

TABLE 13(b) (CONTINUED)

CONFIG	Z=28	Z=29	Z=30	Z=31	Z=32	Z=33	Z=34
26	1384.0	1495.5	1611.4	1731.4	1856.6	1985.5	2118.9
27	1382.4	1494.0	1609.8	1730.0	1854.6	1983.5	2116.8
28	1376.9	1491.6	1610.8	1731.1	1854.2	1990.0	2118.2
29	1397.7	1510.8	1628.3	1750.2	1876.6	2007.5	2142.7
30	1393.7	1506.1	1623.0	1744.2	1869.8	1999.8	2134.2
31	1391.8	1504.1	1620.8	1741.9	1867.4	1997.3	2131.6
32	1388.9	1501.1	1617.7	1738.7	1864.1	1993.9	2128.0
33	1387.6	1499.6	1616.1	1737.0	1862.3	1991.9	2126.0
34	1388.6	1500.5	1616.7	1737.4	1862.4	1991.8	2125.6
35	1387.0	1498.8	1615.1	1735.6	1860.5	1989.9	2123.6
36	1385.1	1496.8	1612.9	1733.4	1858.3	1987.5	2121.1
37	1384.2	1495.8	1611.9	1732.3	1857.1	1986.2	2119.7
38	1386.7	1497.4	1613.2	1733.7	1858.6	1987.5	2120.6
39	1384.5	1495.9	1611.8	1732.0	1857.0	1986.5	2120.3
40	1393.0	1494.5	1610.5	1730.6	1855.0	1984.1	2117.4
41	1386.5	1492.7	1609.7	1729.7	1853.0	1993.8	2123.4
42	1396.7	1509.8	1627.2	1749.1	1875.5	2006.3	2141.5
43	1395.2	1508.1	1625.4	1747.2	1873.4	2004.1	2139.2
44	1394.7	1507.6	1624.9	1746.6	1872.8	2003.5	2138.6
45	1392.6	1505.3	1622.4	1744.0	1870.0	2000.5	2135.4
46	1391.4	1503.6	1620.3	1741.3	1866.7	1996.6	2130.9
47	1390.4	1502.6	1619.2	1740.3	1865.7	1995.5	2129.7
48	1388.7	1500.8	1617.3	1738.1	1863.4	1993.1	2127.1
49	1389.3	1501.4	1618.0	1738.9	1864.3	1994.0	2128.2
50	1388.3	1500.5	1617.0	1737.9	1863.2	1992.9	2127.0

TABLE 13(b) (CONTINUED)

CONFIG	Z=28	Z=29	Z=30	Z=31	Z=32	Z=33	Z=34
51	1386.8	1498.8	1615.1	1735.9	1861.1	1990.6	2124.6
52	1386.6	1498.6	1615.1	1735.9	1861.1	1990.8	2124.8
53	1385.9	1497.9	1614.3	1735.1	1860.3	1989.9	2123.9
54	1384.2	1496.0	1612.3	1733.0	1858.0	1987.5	2121.3
55	1385.3	1497.2	1613.5	1734.2	1859.3	1988.9	2122.8
56	1384.4	1496.3	1612.5	1733.2	1858.3	1987.8	2121.7
57	1382.9	1494.6	1610.8	1731.3	1856.2	1985.6	2119.3
58	1386.3	1498.0	1614.2	1734.7	1859.5	1988.8	2122.4
59	1385.4	1497.1	1613.2	1733.6	1858.5	1987.7	2121.2
60	1383.9	1495.5	1611.4	1731.7	1856.4	1985.5	2118.9
61	1384.7	1496.4	1612.5	1732.8	1857.7	1986.8	2120.3
62	1383.7	1495.4	1611.4	1731.8	1856.6	1985.7	2119.2
63	1382.4	1493.9	1609.7	1730.0	1854.7	1983.6	2117.0
64	1382.9	1494.5	1610.4	1730.8	1855.5	1984.6	2118.0
65	1382.0	1493.6	1609.5	1729.8	1854.5	1983.5	2116.9
66	1380.6	1492.0	1607.8	1728.0	1852.5	1981.4	2114.7
67	1382.0	1493.5	1609.4	1729.7	1854.3	1983.3	2116.7
68	1381.0	1492.5	1608.4	1728.6	1853.2	1982.2	2115.5
69	1379.7	1491.1	1606.8	1726.9	1851.3	1980.1	2113.4
70	1383.4	1495.1	1611.2	1731.0	1856.0	1984.3	2118.1
71	1382.4	1493.7	1609.6	1729.7	1854.7	1983.8	2116.6
72	1381.3	1492.5	1608.3	1728.2	1852.4	1981.5	2114.5
73	1382.3	1493.7	1609.2	1729.5	1854.3	1983.2	2116.3
74	1381.1	1492.7	1608.4	1728.6	1853.0	1981.9	2114.9
75	1379.9	1491.4	1607.0	1726.9	1851.2	1980.1	2112.8

TABLE 13(b) (CONTINUED)

CONFIG	Z=28	Z=29	Z=30	Z=31	Z=32	Z=33	Z=34
76	1380.9	1492.3	1607.9	1728.0	1852.3	1981.2	2114.4
77	1379.9	1491.2	1606.9	1726.8	1851.3	1980.1	2113.2
78	1378.6	1489.8	1605.3	1725.3	1849.5	1978.1	2111.1
79	1381.1	1491.8	1612.3	1727.6	1848.1	1979.9	2115.3
80	1377.2	1488.6	1609.0	1725.1	1854.8	1983.7	2114.0
81	1375.8	1490.6	1607.7	1724.6	1850.0	1981.0	2111.4

TABLE 13(b) (CONTINUED)

CONFIG	Z=35	Z=36	Z=37	Z=38	Z=39	Z=40	Z=41
1	2296.4	2435.0	2583.9	2737.3	2895.2	3057.5	3224.3
2	2286.5	2430.9	2579.7	2733.0	2890.6	3052.8	3219.3
3	2276.4	2419.7	2567.3	2719.4	2876.0	3036.9	3202.3
4	2273.5	2416.7	2564.4	2716.4	2872.8	3033.6	3198.8
5	2270.1	2413.2	2560.8	2712.7	2869.0	3029.7	3194.9
6	2267.7	2410.7	2558.1	2709.9	2866.1	3026.7	3191.7
7	2266.9	2409.6	2556.6	2708.6	2863.8	3024.9	3188.5
8	2264.6	2407.2	2554.2	2705.5	2861.3	3021.4	3186.0
9	2262.3	2404.8	2551.6	2702.9	2858.5	3018.5	3182.9
10	2260.7	2403.1	2549.9	2701.1	2856.7	3016.6	3180.9
11	2261.1	2403.3	2550.7	2701.9	2857.7	3017.4	3181.7
12	2259.1	2402.0	2549.2	2699.9	2855.5	3014.6	3178.7
13	2258.1	2400.2	2546.7	2697.9	2853.1	3012.1	3176.3
14	2260.1	2384.2	2550.4	2701.2	2852.2	3017.1	3176.3
15	2286.0	2430.3	2579.1	2732.3	2890.0	3052.1	3218.6
16	2282.5	2426.6	2575.2	2728.3	2885.8	3047.7	3214.1
17	2272.5	2415.6	2563.1	2715.0	2871.4	3032.1	3197.3
18	2269.6	2412.7	2560.2	2712.0	2868.3	3028.9	3194.0
19	2266.3	2409.3	2556.6	2708.4	2864.5	3025.1	3190.0
20	2263.9	2406.8	2554.0	2705.7	2861.7	3022.1	3187.0
21	2263.2	2405.7	2552.5	2703.8	2859.4	3019.4	3183.8
22	2261.1	2403.5	2550.2	2701.4	2857.0	3017.0	3181.2
23	2258.6	2401.0	2547.7	2698.8	2854.2	3014.1	3178.3
24	2257.1	2399.4	2546.0	2697.0	2852.4	3012.2	3176.4
25	2258.4	2400.3	2546.9	2697.3	2852.7	3012.8	3176.4

TABLE 13(b) (CONTINUED)

CONFIG	Z=35	Z=36	Z=37	Z=38	Z=39	Z=40	Z=41
26	2256.4	2398.4	2545.0	2695.6	2850.8	3010.4	3174.3
27	2254.5	2396.5	2542.9	2693.7	2848.7	3008.1	3171.9
28	2255.3	2397.8	2543.4	2700.3	2854.9	3010.6	3180.8
29	2282.5	2426.6	2575.2	2728.3	2885.8	3047.7	3214.1
30	2273.0	2416.1	2563.6	2715.6	2871.9	3032.7	3197.9
31	2270.3	2413.4	2560.9	2712.7	2869.0	3029.6	3194.7
32	2266.6	2409.6	2557.0	2708.7	2864.9	3025.4	3190.4
33	2264.4	2407.3	2554.5	2706.2	2862.2	3022.7	3187.5
34	2263.7	2406.2	2553.1	2704.4	2860.0	3020.0	3184.4
35	2261.7	2404.1	2550.9	2702.1	2857.8	3017.7	3182.1
36	2259.1	2401.5	2549.2	2699.3	2854.8	3014.6	3178.8
37	2257.6	2399.9	2546.6	2697.6	2853.0	3012.8	3177.0
38	2258.5	2400.7	2547.7	2698.1	2854.4	3014.9	3177.1
39	2257.0	2399.3	2545.5	2696.4	2852.1	3011.0	3174.3
40	2255.2	2397.1	2543.5	2694.4	2849.4	3008.6	3172.6
41	2260.7	2394.4	2534.7	2698.9	2861.8	3005.7	3180.7
42	2291.2	2425.4	2573.9	2727.0	2884.4	3046.3	3212.7
43	2278.7	2422.7	2571.2	2724.0	2881.4	3043.1	3209.3
44	2278.1	2422.1	2570.5	2723.4	2880.7	3042.4	3208.6
45	2274.7	2418.6	2566.8	2719.5	2876.6	3038.2	3204.2
46	2269.5	2412.4	2559.8	2711.6	2867.7	3028.4	3193.4
47	2268.3	2411.2	2558.5	2710.3	2866.5	3027.0	3192.0
48	2265.6	2408.4	2555.6	2707.2	2863.2	3023.6	3188.4
49	2266.7	2409.6	2556.9	2708.6	2864.7	3025.2	3190.1
50	2265.5	2408.4	2555.7	2707.4	2863.4	3023.9	3188.8

TABLE 13(b) (CONTINUED)

CONFIG	Z=35	Z=36	Z=37	Z=38	Z=39	Z=40	Z=41
51	2263.0	2405.7	2552.9	2704.4	2860.3	3020.6	3185.3
52	2263.2	2406.0	2553.2	2704.8	2860.8	3021.2	3186.1
53	2262.2	2405.0	2552.2	2703.8	2859.8	3020.1	3184.9
54	2259.6	2402.2	2549.2	2700.7	2856.5	3016.7	3181.3
55	2261.1	2403.7	2550.8	2702.3	2858.2	3018.5	3183.2
56	2259.9	2402.6	2549.7	2701.1	2857.0	3017.2	3181.9
57	2257.4	2399.9	2546.9	2698.2	2853.9	3014.0	3178.5
58	2260.4	2402.7	2549.4	2701.6	2856.9	3015.9	3180.1
59	2259.2	2401.5	2548.2	2699.3	2854.8	3014.6	3178.8
60	2256.8	2399.0	2545.5	2696.5	2851.8	3011.5	3175.5
61	2258.3	2400.6	2547.3	2698.3	2853.7	3013.5	3177.7
62	2257.1	2399.4	2546.0	2697.0	2852.4	3012.1	3176.2
63	2254.8	2396.9	2543.4	2694.2	2849.5	3009.1	3173.1
64	2255.8	2398.1	2544.6	2695.6	2850.9	3010.6	3174.7
65	2254.7	2396.9	2543.5	2694.4	2849.7	3009.3	3173.4
66	2252.4	2394.4	2540.8	2691.6	2846.7	3006.3	3170.2
67	2254.4	2396.5	2543.1	2693.9	2849.2	3008.8	3172.8
68	2253.2	2395.3	2541.8	2692.7	2847.9	3007.5	3171.5
69	2250.9	2392.9	2539.2	2690.0	2845.0	3004.5	3168.3
70	2255.4	2397.6	2543.9	2694.6	2849.8	3009.4	3173.2
71	2254.1	2396.3	2542.6	2693.2	2848.2	3007.1	3171.5
72	2251.8	2393.7	2540.2	2690.4	2845.4	3004.5	3168.3
73	2254.0	2395.8	2542.2	2692.6	2847.4	3006.7	3170.8
74	2252.6	2394.4	2540.6	2691.5	2846.4	3005.7	3169.3
75	2250.5	2392.1	2538.4	2688.9	2843.6	3002.6	3166.3

TABLE 13(b) (CONTINUED)

CONFIG	Z=35	Z=36	Z=37	Z=38	Z=39	Z=40	Z=41
76	2251.8	2393.6	2539.9	2690.5	2845.5	3004.9	3168.5
77	2250.7	2392.5	2538.8	2689.4	2844.3	3003.4	3167.1
78	2248.5	2390.2	2536.3	2686.7	2841.5	3000.6	3164.2
79	2246.5	2391.7	2538.1	2694.1	2849.2	3008.7	3170.6
80	2252.5	2393.7	2542.8	2689.7	2843.4	3006.7	3168.0
81	2249.7	2391.2	2535.7	2685.9	2840.8	3001.3	3162.4

TABLE 13(b) (CONTINUED)

CONFIG	Z=42	Z=43	Z=44	Z=45	Z=46	Z=47	Z=48
1	3395.5	3571.1	3751.2	3935.7	4124.7	4318.1	4515.9
2	3390.4	3565.8	3745.8	3930.1	4118.9	4312.1	4509.8
3	3371.9	3546.1	3724.5	3907.2	4094.5	4286.2	4482.3
4	3368.4	3542.4	3720.7	3903.5	4090.6	4282.1	4478.0
5	3364.4	3538.3	3716.6	3899.3	4086.4	4277.8	4473.7
6	3361.2	3535.0	3713.2	3895.8	4082.8	4274.1	4469.9
7	3357.4	3530.7	3708.3	3890.3	4076.8	4267.5	4462.7
8	3354.6	3528.0	3705.5	3887.4	4073.9	4264.6	4459.7
9	3351.7	3524.8	3702.3	3884.2	4070.4	4261.1	4456.0
10	3349.6	3522.7	3700.1	3881.9	4068.1	4258.6	4453.6
11	3349.5	3522.5	3700.2	3879.7	4066.4	4255.7	4451.2
12	3347.5	3519.2	3697.3	3878.8	4064.2	4255.1	4448.5
13	3345.0	3517.8	3694.6	3876.1	4062.0	4251.9	4446.6
14	3344.6	3514.6	3692.7	3881.6	4048.9	4253.4	4453.8
15	3389.6	3565.1	3745.0	3929.3	4118.1	4311.3	4509.0
16	3385.0	3560.3	3740.0	3924.2	4112.8	4305.8	4503.3
17	3366.8	3540.8	3719.0	3901.6	4088.7	4280.2	4476.2
18	3363.4	3537.2	3715.3	3897.9	4084.8	4276.2	4472.0
19	3359.4	3533.1	3711.2	3893.8	4080.7	4272.0	4467.7
20	3356.2	3529.9	3707.9	3890.3	4077.1	4268.4	4464.0
21	3352.6	3525.7	3703.2	3885.0	4071.3	4261.9	4456.8
22	3349.9	3523.0	3700.3	3882.2	4068.4	4259.0	4453.9
23	3346.9	3519.9	3697.2	3878.9	4065.0	4255.4	4450.3
24	3344.9	3517.8	3695.0	3876.7	4062.7	4253.1	4447.8
25	3344.5	3517.6	3695.2	3875.7	4061.4	4252.5	4445.2

TABLE 13(b) (CONTINUED)

CONFIG	Z=42	Z=43	Z=44	Z=45	Z=46	Z=47	Z=48
26	3342.5	3514.9	3692.5	3873.1	4059.1	4249.7	4443.1
27	3340.2	3512.7	3689.6	3870.9	4056.5	4246.6	4440.8
28	3340.5	3511.9	3690.0	3870.9	4047.5	4251.5	4440.3
29	3385.0	3560.2	3739.9	3924.1	4112.7	4305.8	4503.3
30	3367.5	3541.3	3719.6	3902.3	4089.3	4280.9	4476.8
31	3364.1	3537.9	3716.1	3898.7	4085.6	4277.0	4472.8
32	3359.7	3533.5	3711.6	3894.1	4081.1	4272.4	4468.1
33	3356.8	3530.4	3708.4	3890.9	4077.7	4268.9	4464.5
34	3353.1	3526.3	3703.8	3885.6	4071.9	4262.5	4457.5
35	3350.5	3523.6	3701.1	3882.9	4069.1	4259.8	4454.6
36	3347.4	3520.4	3697.8	3879.5	4065.5	4256.0	4450.9
37	3345.5	3518.4	3695.7	3877.3	4063.4	4253.8	4448.5
38	3345.6	3517.1	3694.4	3875.8	4061.4	4252.6	4446.8
39	3343.6	3515.5	3693.5	3874.3	4060.0	4250.1	4444.2
40	3340.8	3513.5	3690.3	3871.8	4057.4	4247.1	4441.7
41	3344.4	3515.8	3688.5	3876.2	4058.9	4250.8	4429.3
42	3383.5	3558.7	3738.4	3922.6	4111.1	4304.2	4501.6
43	3380.0	3555.1	3734.6	3918.6	4107.1	4299.9	4497.3
44	3379.3	3554.4	3733.9	3917.9	4106.3	4299.1	4496.5
45	3374.7	3549.6	3729.0	3912.8	4101.0	4293.7	4490.9
46	3362.7	3536.5	3714.6	3897.1	4084.0	4275.4	4471.2
47	3361.3	3535.0	3713.1	3895.6	4082.5	4273.9	4469.6
48	3357.6	3531.2	3709.1	3891.5	4078.3	4269.4	4465.0
49	3359.4	3533.0	3711.0	3893.5	4080.2	4271.5	4467.1
50	3358.0	3531.6	3709.6	3892.0	4078.7	4269.9	4465.5

TABLE 13(b) (CONTINUED)

CONFIG	Z=42	Z=43	Z=44	Z=45	Z=46	Z=47	Z=48
51	3354.4	3527.9	3705.7	3888.6	4074.6	4265.6	4461.1
52	3355.2	3528.8	3706.8	3889.1	4075.9	4267.3	4462.6
53	3354.0	3527.6	3705.5	3887.9	4074.6	4265.8	4461.3
54	3350.3	3523.7	3701.5	3883.7	4070.3	4261.3	4456.7
55	3352.3	3525.7	3703.6	3885.9	4072.6	4263.6	4459.1
56	3351.0	3524.4	3702.3	3884.5	4071.2	4262.2	4457.6
57	3347.4	3520.7	3698.4	3880.5	4067.0	4257.9	4453.2
58	3348.7	3521.7	3699.0	3880.7	4066.8	4257.3	4452.1
59	3347.4	3520.3	3697.6	3879.3	4065.4	4255.8	4450.6
60	3344.0	3516.8	3693.9	3875.5	4061.4	4251.7	4446.4
61	3346.1	3519.1	3696.3	3878.0	4064.0	4254.5	4449.2
62	3344.8	3517.7	3694.8	3876.5	4062.5	4252.9	4447.7
63	3341.5	3514.2	3691.3	3872.8	4058.6	4248.9	4443.5
64	3343.1	3515.9	3693.1	3874.7	4060.6	4250.9	4445.6
65	3341.8	3514.6	3691.7	3873.2	4059.2	4249.4	4444.1
66	3338.4	3511.1	3688.1	3869.5	4055.3	4245.4	4439.9
67	3341.2	3513.9	3691.1	3872.6	4058.4	4248.7	4443.3
68	3339.8	3512.5	3689.6	3871.1	4056.9	4247.1	4441.7
69	3336.5	3509.1	3686.1	3867.4	4053.1	4243.2	4437.6
70	3340.7	3513.4	3690.8	3871.9	4057.6	4247.8	4441.2
71	3340.0	3511.5	3689.3	3869.9	4055.9	4245.9	4440.0
72	3337.1	3508.6	3685.7	3866.2	4052.1	4241.9	4435.6
73	3339.2	3511.3	3688.6	3869.5	4055.7	4246.0	4439.1
74	3337.7	3510.0	3686.7	3868.3	4053.4	4243.1	4437.7
75	3334.5	3506.8	3683.5	3864.5	4049.7	4239.6	4433.6

TABLE 13(b) (CONCLUDED)

CONFIG	Z=42	Z=43	Z=44	Z=45	Z=46	Z=47	Z=48
76	3336.6	3509.1	3685.8	3866.9	4052.3	4242.2	4436.4
77	3335.2	3507.6	3684.3	3865.4	4050.8	4240.7	4434.9
78	3332.0	3504.3	3680.9	3861.8	4047.1	4236.8	4430.9
79	3336.8	3515.1	3686.0	3868.3	4053.1	4237.9	4440.5
80	3337.1	3505.3	3680.1	3861.0	4052.2	4240.4	4434.6
81	3330.4	3504.2	3681.4	3862.1	4046.0	4237.3	4431.0

TABLE 14(a)–CONFIGURATION LIST FOR 15 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S	2S	2P	3S	3P	3D	4S	4P	4D	4F	5S	5P	5D	5F	6S	6P	6D	7S
GROUND CONFIGURATION																			
1	ODD	2	2	6	2	3													
ONE-ELECTRON EXCITED CONFIGURATIONS																			
2		2	2	6	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0
3		2	2	6	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0
4	ODD	2	2	6	2	2	0	0	1	0	0	0	0	0	0	0	0	0	0
5		2	2	6	2	2	0	0	0	1	0	0	0	0	0	0	0	0	0
6	ODD	2	2	6	2	2	0	0	0	0	1	0	0	0	0	0	0	0	0
7		2	2	6	2	2	0	0	0	0	0	1	0	0	0	0	0	0	0
8	ODD	2	2	6	2	2	0	0	0	0	0	0	1	0	0	0	0	0	0
9		2	2	6	2	2	0	0	0	0	0	0	0	1	0	0	0	0	0
10	ODD	2	2	6	2	2	0	0	0	0	0	0	0	0	1	0	0	0	0
11		2	2	6	2	2	0	0	0	0	0	0	0	0	0	1	0	0	0
12	ODD	2	2	6	2	2	0	0	0	0	0	0	0	0	0	0	1	0	0
13		2	2	6	2	2	0	0	0	0	0	0	0	0	0	0	0	1	0
14		2	2	6	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1
15		2	2	6	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0
16	ODD	2	2	6	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0
17	ODD	2	2	6	1	3	0	1	0	0	0	0	0	0	0	0	0	0	0
18		2	2	6	1	3	0	0	1	0	0	0	0	0	0	0	0	0	0
19	ODD	2	2	6	1	3	0	0	0	1	0	0	0	0	0	0	0	0	0
20		2	2	6	1	3	0	0	0	0	1	0	0	0	0	0	0	0	0
21	ODD	2	2	6	1	3	0	0	0	0	0	1	0	0	0	0	0	0	0
22		2	2	6	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0
23	ODD	2	2	6	1	3	0	0	0	0	0	0	0	1	0	0	0	0	0
24		2	2	6	1	3	0	0	0	0	0	0	0	0	1	0	0	0	0
25	ODD	2	2	6	1	3	0	0	0	0	0	0	0	0	0	1	0	0	0
26		2	2	6	1	3	0	0	0	0	0	0	0	0	0	0	1	0	0
27	ODD	2	2	6	1	3	0	0	0	0	0	0	0	0	0	0	0	1	0
28	ODD	2	2	6	1	3	0	0	0	0	0	0	0	0	0	0	0	0	1
TWO-ELECTRON EXCITED CONFIGURATIONS																			
29	ODD	2	2	6	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0
30	ODD	2	2	6	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0
31		2	2	6	2	1	1	0	1	0	0	0	0	0	0	0	0	0	0
32	ODD	2	2	6	2	1	1	0	0	1	0	0	0	0	0	0	0	0	0
33		2	2	6	2	1	1	0	0	0	1	0	0	0	0	0	0	0	0
34	ODD	2	2	6	2	1	1	0	0	0	0	1	0	0	0	0	0	0	0
35		2	2	6	2	1	1	0	0	0	0	0	1	0	0	0	0	0	0
36	ODD	2	2	6	2	1	1	0	0	0	0	0	0	1	0	0	0	0	0
37		2	2	6	2	1	1	0	0	0	0	0	0	0	1	0	0	0	0
38	ODD	2	2	6	2	1	1	0	0	0	0	0	0	0	0	1	0	0	0
39		2	2	6	2	1	1	0	0	0	0	0	0	0	0	0	1	0	0
40	ODD	2	2	6	2	1	1	0	0	0	0	0	0	0	0	0	0	1	0
41	ODD	2	2	6	2	1	1	0	0	0	0	0	0	0	0	0	0	0	1
42	ODD	2	2	6	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
43		2	2	6	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0
44		2	2	6	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0
45	ODD	2	2	6	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0
46		2	2	6	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0
47		2	2	6	0	4	0	1	0	0	0	0	0	0	0	0	0	0	0

TABLE 14(a) (CONCLUDED)

48	ODD	2	2	6	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0
49	ODD	2	2	6	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0
50	ODD	2	2	6	0	4	0	0	1	0	0	0	0	0	0	0	0	0	0
51		2	2	6	0	3	1	0	1	0	0	0	0	0	0	0	0	0	0
52		2	2	6	1	2	1	0	0	1	0	0	0	0	0	0	0	0	0
53		2	2	6	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0
54	ODD	2	2	6	0	3	1	0	0	1	0	0	0	0	0	0	0	0	0
55	ODD	2	2	6	1	2	1	0	0	0	1	0	0	0	0	0	0	0	0
56	ODD	2	2	6	0	4	0	0	0	0	1	0	0	0	0	0	0	0	0
57		2	2	6	0	3	1	0	0	0	1	0	0	0	0	0	0	0	0
58		2	2	6	1	2	1	0	0	0	0	1	0	0	0	0	0	0	0
59		2	2	6	0	4	0	0	0	0	0	1	0	0	0	0	0	0	0
60	ODD	2	2	6	0	3	1	0	0	0	0	1	0	0	0	0	0	0	0
61	ODD	2	2	6	1	2	1	0	0	0	0	0	1	0	0	0	0	0	0
62	ODD	2	2	6	0	4	0	0	0	0	0	0	1	0	0	0	0	0	0
63		2	2	6	0	3	1	0	0	0	0	0	1	0	0	0	0	0	0
64		2	2	6	1	2	1	0	0	0	0	0	0	1	0	0	0	0	0
65		2	2	6	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0
66	ODD	2	2	6	0	3	1	0	0	0	0	0	0	1	0	0	0	0	0
67	ODD	2	2	6	1	2	1	0	0	0	0	0	0	0	1	0	0	0	0
68	ODD	2	2	6	0	4	0	0	0	0	0	0	0	0	1	0	0	0	0
69		2	2	6	0	3	1	0	0	0	0	0	0	0	1	0	0	0	0
70		2	2	6	1	2	1	0	0	0	0	0	0	0	0	1	0	0	0
71		2	2	6	0	4	0	0	0	0	0	0	0	0	0	1	0	0	0
72	ODD	2	2	6	0	3	1	0	0	0	0	0	0	0	0	1	0	0	0
73	ODD	2	2	6	1	2	1	0	0	0	0	0	0	0	0	0	1	0	0
74	ODD	2	2	6	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0
75		2	2	6	0	3	1	0	0	0	0	0	0	0	0	0	1	0	0
76		2	2	6	1	2	1	0	0	0	0	0	0	0	0	0	0	1	0
77		2	2	6	0	4	0	0	0	0	0	0	0	0	0	0	0	1	0
78	ODD	2	2	6	0	3	1	0	0	0	0	0	0	0	0	0	0	1	0
79		2	2	6	1	2	1	0	0	0	0	0	0	0	0	0	0	0	1
80		2	2	6	0	4	0	0	0	0	0	0	0	0	0	0	0	0	1
81	ODD	2	2	6	0	3	1	0	0	0	0	0	0	0	0	0	0	0	1

TABLE 14(b)–15 ELECTRONS

CONFIG	Z=30	Z=31	Z=32	Z=33	Z=34	Z=35	Z=36
1	1554.5	1779.7	1978.0	2041.6	2179.8	2322.5	2469.8
2	1551.5	1775.8	1974.7	2138.1	2176.1	2318.7	2465.8
3	1646.2	1769.8	1897.9	2030.5	2167.6	2309.2	2455.3
4	1643.8	1767.2	1895.2	2027.7	2164.7	2306.2	2452.3
5	1640.9	1764.2	1892.1	2024.5	2161.4	2302.8	2448.7
6	1639.0	1762.2	1889.9	2022.2	2159.0	2300.2	2446.0
7	1640.1	1763.2	1891.6	2022.7	2159.1	2300.1	2445.6
8	1638.3	1761.2	1888.7	2020.8	2156.9	2297.9	2443.1
9	1636.2	1759.1	1886.4	2018.2	2154.5	2295.4	2440.6
10	1635.0	1757.7	1885.0	2016.7	2153.0	2293.7	2438.9
11	1636.1	1758.7	1887.5	2019.3	2154.8	2295.3	2440.9
12	1635.5	1758.7	1884.9	2017.2	2152.1	2293.4	2438.7
13	1633.7	1756.3	1883.3	2014.9	2150.8	2291.4	2436.3
14	1628.0	1760.1	1876.0	2015.2	2149.7	2296.9	2436.6
15	1651.9	1775.1	1904.0	2037.4	2175.3	2317.9	2464.9
16	1648.2	1772.3	1901.0	2034.2	2172.0	2314.4	2461.3
17	1643.0	1766.4	1894.3	2026.7	2163.7	2305.1	2451.0
18	1641.5	1763.9	1891.7	2024.0	2160.8	2302.2	2448.0
19	1637.8	1760.9	1888.6	2020.8	2157.5	2298.7	2444.4
20	1635.9	1758.9	1886.5	2018.6	2155.1	2296.2	2441.8
21	1637.0	1759.9	1887.2	2019.0	2155.3	2296.1	2441.4
22	1635.2	1758.0	1885.2	2016.9	2153.2	2293.9	2439.1
23	1633.1	1755.8	1883.0	2014.7	2150.8	2291.5	2436.6
24	1632.0	1754.6	1881.6	2013.2	2149.3	2289.8	2434.9
25	1633.7	1756.2	1884.2	2014.5	2151.0	2291.6	2436.5

TABLE 14(b) (CONTINUED)

CONFIG	Z=30	Z=31	Z=32	Z=33	Z=34	Z=35	Z=36
26	1632.3	1754.6	1881.6	2013.4	2149.2	2289.4	2434.4
27	1630.7	1753.2	1880.3	2011.3	2147.1	2287.5	2432.4
28	1629.3	1757.9	1959.2	2009.6	2146.8	2289.0	2430.8
29	1648.4	1772.5	1901.2	2034.4	2172.2	2314.6	2461.5
30	1643.6	1767.0	1894.9	2027.4	2164.4	2305.8	2451.7
31	1641.2	1764.5	1892.3	2024.7	2161.5	2302.9	2448.7
32	1638.1	1761.3	1889.0	2021.2	2157.9	2299.2	2444.9
33	1636.5	1759.8	1887.1	2019.2	2155.8	2296.9	2442.5
34	1637.6	1760.5	1887.8	2019.7	2156.0	2296.8	2442.1
35	1635.8	1758.6	1886.0	2017.7	2153.9	2294.7	2439.9
36	1633.7	1756.4	1883.6	2015.2	2151.4	2292.1	2437.2
37	1632.6	1755.2	1882.3	2013.9	2150.0	2290.5	2435.6
38	1634.6	1757.0	1884.1	2016.1	2152.3	2292.3	2438.0
39	1632.7	1755.0	1882.2	2013.7	2150.1	2290.1	2435.8
40	1631.2	1753.7	1880.8	2012.1	2147.9	2288.2	2433.(
41	1629.5	1752.1	1881.2	2013.3	2150.6	2293.1	2433.5
42	1647.0	1771.1	1899.7	2032.9	2170.7	2313.0	2459.8
43	1645.4	1769.3	1897.8	2030.9	2168.5	2310.7	2457.4
44	1644.7	1768.5	1897.1	2030.1	2167.7	2309.9	2456.6
45	1642.2	1766.0	1894.3	2027.1	2164.5	2306.5	2453.(
46	1640.7	1763.9	1891.7	2024.0	2162.8	2302.0	2447.7
47	1639.6	1762.8	1890.5	2022.7	2159.5	2300.7	2446.4
48	1637.5	1760.6	1888.2	2020.3	2156.8	2297.9	2443.5
49	1638.3	1761.5	1889.1	2021.3	2158.0	2299.1	2444.8
50	1637.2	1760.3	1887.9	2020.0	2156.7	2297.8	2443.5

TABLE 14(b) (CONTINUED)

CONFIG	Z=30	Z=31	Z=32	Z=33	Z=34	Z=35	Z=36
51	1635.3	1758.2	1885.7	2017.7	2154.2	2295.1	2440.6
52	1635.3	1758.3	1885.8	2017.9	2154.4	2295.5	2441.1
53	1634.4	1757.4	1884.9	2016.9	2153.4	2294.4	2440.0
54	1632.3	1755.1	1882.5	2014.3	2150.7	2291.6	2436.9
55	1633.7	1756.6	1884.0	2015.9	2152.3	2293.2	2438.7
56	1632.6	1755.5	1882.8	2014.7	2151.1	2292.0	2437.4
57	1631.7	1753.4	1880.7	2012.4	2148.6	2289.4	2434.6
58	1634.8	1757.5	1884.7	2016.4	2152.5	2293.2	2438.3
59	1633.7	1756.4	1883.5	2015.2	2151.3	2291.9	2437.0
60	1631.9	1754.4	1881.4	2012.9	2148.8	2289.3	2434.3
61	1633.1	1755.7	1882.8	2014.4	2150.5	2291.1	2436.1
62	1631.9	1754.5	1881.6	2013.1	2149.2	2289.7	2434.7
63	1631.1	1752.6	1879.5	2010.9	2146.8	2287.2	2432.1
64	1631.0	1753.5	1880.5	2012.0	2148.0	2288.5	2433.5
65	1629.9	1752.4	1879.4	2010.9	2146.8	2287.3	2432.2
66	1629.1	1751.4	1877.3	2008.6	2144.4	2284.7	2429.5
67	1629.9	1752.4	1878.3	2010.7	2146.6	2287.5	2431.9
68	1628.8	1751.2	1878.1	2009.5	2145.3	2285.7	2430.5
69	1627.9	1749.3	1876.1	2007.3	2143.0	2283.2	2427.9
70	1631.6	1754.4	1881.3	2011.7	2147.5	2288.4	2433.2
71	1630.1	1752.9	1880.1	2010.8	2146.5	2286.7	2431.9
72	1629.1	1751.1	1877.8	2008.3	2144.3	2284.8	2429.5
73	1630.4	1752.7	1879.4	2010.9	2146.9	2286.7	2431.6
74	1628.9	1751.4	1877.8	2009.3	2145.3	2285.6	2430.0
75	1627.4	1749.4	1876.2	2007.3	2143.0	2283.1	2427.2

TABLE 14(b) (CONTINUED)

CONFIG	Z=30	Z=31	Z=32	Z=33	Z=34	Z=35	Z=36
76	1628.7	1750.9	1877.7	2008.9	2144.5	2284.8	2429.4
77	1627.6	1749.7	1876.4	2007.6	2143.2	2283.4	2428.1
78	1625.8	1747.9	1874.4	2005.5	2141.1	2281.3	2425.4
79	1633.1	1752.1	1879.1	2010.7	2147.8	2286.2	2431.6
80	1634.4	1754.1	1881.9	2013.2	2148.6	2288.4	2429.8
81	1626.0	1750.2	1876.6	2004.8	2141.9	2284.6	2424.9

TABLE 14(b) (CONTINUED)

CONFIG	Z=37	Z=38	Z=39	Z=40	Z=41	Z=42	Z=43
1	2621.6	2777.9	2938.9	3104.3	3274.4	3449.0	3628.2
2	2617.4	2773.6	2934.3	3099.7	3269.5	3444.0	3622.9
3	2615.8	2769.9	2929.5	3094.7	3263.4	3436.5	3614.2
4	2612.8	2767.7	2927.3	3091.7	3260.8	3432.9	3610.4
5	2609.1	2764.0	2923.4	3087.3	3257.7	3428.7	3606.1
6	2607.3	2761.1	2920.3	3084.1	3252.4	3425.3	3602.6
7	2605.5	2758.9	2918.8	3082.2	3250.1	3422.4	3599.3
8	2603.2	2757.4	2916.3	3079.6	3247.4	3419.7	3596.4
9	2600.4	2754.7	2913.4	3076.6	3244.3	3416.5	3593.2
10	2598.6	2752.3	2911.4	3074.5	3242.2	3414.4	3591.0
11	2598.6	2752.9	2911.9	3074.4	3243.7	3415.8	3592.2
12	2597.7	2752.2	2911.6	3073.0	3239.9	3412.4	3589.4
13	2595.7	2749.5	2909.1	3070.8	3238.0	3410.0	3586.4
14	2594.7	2748.2	2908.1	3069.2	3236.3	3409.7	3592.2
15	2616.6	2772.7	2933.5	3098.7	3268.6	3443.0	3622.6
16	2612.2	2768.3	2929.3	3094.4	3264.1	3438.4	3617.2
17	2611.4	2766.2	2927.7	3092.6	3262.2	3436.1	3598.6
18	2609.3	2763.1	2926.5	3090.3	3260.7	3433.5	3594.9
19	2606.7	2760.4	2923.6	3087.4	3256.6	3431.3	3590.6
20	2601.9	2756.5	2920.6	3083.2	3253.4	3430.0	3587.2
21	2601.2	2756.4	2920.1	3083.3	3253.0	3430.2	3583.9
22	2598.6	2752.3	2921.6	3084.8	3252.4	3430.5	3581.2
23	2596.9	2750.2	2920.9	3083.8	3249.4	3431.4	3577.9
24	2594.4	2749.4	2919.9	3082.8	3247.3	3429.3	3575.7
25	2595.6	2749.7	2919.6	3082.2	3248.6	3430.1	3576.5

TABLE 14(b) (CONTINUED)

CONFIG	Z=37	Z=38	Z=39	Z=40	Z=41	Z=42	Z=43
26	2583.7	2737.6	2896.1	3058.6	3225.7	3397.2	3573.5
27	2591.7	2743.3	2893.6	3056.2	3223.2	3395.1	3571.6
28	2577.9	2733.3	2887.4	3057.6	3227.5	3398.8	3572.3
29	2612.9	2769.	2929.5	3094.6	3264.3	3438.6	3617.4
30	2582.1	2737.	2916.4	3080.4	3249.9	3421.9	3599.4
31	2590.1	2753.9	2913.2	3077.1	3245.5	3418.3	3595.7
32	2575.1	2740.3	2906.1	3072.9	3241.1	3413.9	3591.2
33	2582.6	2747.2	2905.3	3071.0	3238.1	3410.8	3588.0
34	2591.9	2746.1	2904.8	3068.1	3235.8	3408.4	3584.7
35	2586.6	2743.7	2902.5	3065.6	3233.3	3405.4	3582.1
36	2586.8	2744.9	2900.5	3062.5	3231.1	3402.1	3579.6
37	2585.1	2736.2	2897.7	3061.7	3228.1	3402.1	3576.6
38	2586.8	2741.2	2899.6	3061.6	3228.8	3401.9	3577.1
39	2584.4	2738.6	2896.3	3059.4	3226.8	3398.5	3574.5
40	2582.4	2736.1	2894.1	3057.1	3224.2	3395.8	3572.0
41	2587.6	2743.1	2892.7	3052.	3219.4	3402.4	3574.7
42	2611.3	2757.2	2927.4	3092.8	3262.5	3436.7	3615.4
43	2583.7	2764.	2924.9	3089.8	3259.3	3433.4	3612.1
44	2587.8	2763.6	2924.	3088.9	3258.4	3432.5	3611.1
45	2604.1	2756.3	2902.	3064.7	3234.	3407.9	3586.3
46	2589.4	2752.7	2916.	3075.8	3244.1	3417.	3594.3
47	2586.6	2751.3	2911.5	3074.3	3242.6	3415.3	3592.6
48	2593.5	2742.1	2907.2	3073.8	3242.9	3411.5	3588.6
49	2595.	2745.6	2905.8	3072.5	3241.7	3413.4	3591.6
50	2592.6	2742.3	2905.4	3071.0	3239.2	3411.8	3589.1

TABLE 14(b) (CONTINUED)

CONFIG	Z=37	Z=38	Z=39	Z=40	Z=41	Z=42	Z=43
51	2580.6	2745.1	2904.1	3047.5	3236.0	3408.1	3585.1
52	2591.1	2745.7	2904.9	3060.7	3236.4	3409.0	3586.2
53	2587.7	2744.5	2903.6	3057.1	3235.2	3407.7	3584.8
54	2586.8	2741.2	2901.1	3053.5	3231.4	3403.8	3580.8
55	2588.5	2743.1	2903.1	3055.5	3233.4	3405.9	3583.0
56	2587.3	2741.7	2901.6	3054.0	3232.0	3404.5	3581.4
57	2584.4	2739.6	2897.4	3049.7	3228.5	3400.8	3577.6
58	2587.9	2743.1	2901.6	3053.6	3231.2	3403.2	3579.8
59	2586.6	2741.6	2899.2	3052.2	3229.7	3401.7	3578.2
60	2583.7	2737.6	2896.0	3048.9	3226.3	3399.1	3574.5
61	2585.6	2739.7	2899.2	3051.2	3228.7	3400.6	3577.1
62	2584.3	2738.3	2896.7	3049.7	3227.1	3399.0	3575.4
63	2581.5	2735.4	2893.6	3046.5	3223.8	3395.6	3571.8
64	2582.9	2736.8	2895.7	3048.2	3225.5	3397.4	3573.6
65	2581.6	2735.5	2893.9	3045.7	3224.1	3395.9	3572.3
66	2579.8	2732.5	2891.8	3043.5	3221.7	3392.4	3569.5
67	2581.3	2735.1	2893.5	3046.3	3223.6	3395.4	3571.7
68	2579.9	2733.7	2892.0	3044.8	3222.1	3393.8	3570.1
69	2577.1	2734.4	2889.0	3041.6	3218.8	3390.4	3566.5
70	2582.0	2736.7	2894.8	3047.9	3224.4	3396.5	3571.2
71	2580.8	2734.3	2892.3	3045.6	3223.3	3397.8	3570.8
72	2578.6	2732.2	2890.0	3042.6	3219.0	3394.9	3566.8
73	2581.8	2736.6	2892.4	3045.6	3221.6	3393.4	3569.6
74	2579.2	2732.6	2891.1	3043.6	3222.3	3393.1	3568.6
75	2576.9	2730.0	2888.7	3040.1	3217.1	3388.7	3564.7

TABLE 14(b) (CONTINUED)

CONFIG	Z=37	Z=38	Z=39	Z=40	Z=41	Z=42	Z=43
76	2578.5	2732.1	2887.1	3052.7	3219.5	3391.2	3567.0
77	2577.1	2731.7	2886.7	3051.1	3218.2	3389.6	3565.8
78	2574.4	2727.9	2885.6	3049.1	3214.9	3386.3	3562.0
79	2577.6	2733.4	2893.5	3059.0	3217.7	3387.0	3572.2
87	2577.0	2728.3	2891.3	3053.4	3227.2	3392.6	3564.6
81	2571.9	2729.6	2886.8	3049.3	3219.3	3387.9	3563.2

TABLE 14(b) (CONTINUED)

CONFIG	Z=44	Z=45	Z=46	Z=47	Z=48	Z=49	Z=50
1	3811.9	[illegible]	4193.[illegible]	4394.3	4592.3	4799.7	5009.8
2	3816.5	3994.1	4127.2	4324.4	4580.2	4792.5	5003.3
3	3786.3	3972.9	4163.9	4359.6	4559.7	4764.5	4973.8
4	3782.4	3958.3	4159.9	4355.3	4555.4	4760.0	4969.1
5	3779.1	3964.5	4156.5	4351.[illegible]	4551.9	4756.4	4964.4
6	3774.8	3961.3	4151.7	4347.[illegible]	4546.9	4751.3	4960.2
7	3771.6	3956.4	4146.7	4341.4	4542.7	4744.4	4952.7
8	3767.7	3953.6	4143.7	4338.4	4537.7	4741.2	4949.4
9	3764.4	3951.[illegible]	4140.[illegible]	4334.7	4533.8	4737.4	4945.5
10	3762.1	3947.6	4137.7	4332.2	4531.3	4734.8	4942.8
11	3762.1	3946.4	4136.3	4332.2	4528.[illegible]	4732.3	4941.[illegible]
12	3761.[illegible]	3945.5	4135.[illegible]	4329.2	4528.6	4730.7	4938.6
13	3756.6	3942.2	4132.[illegible]	4325.2	4524.7	4727.9	4935.2
14	3752.8	3939.3	4112.4	4325.5	4524.6	4723.1	4932.5
15	3745.5	3933.5	4186.2	4383.3	4585.1	4791.4	5002.2
16	3805.5	3988.4	4185.9	4377.6	4579.4	4785.6	4996.2
17	3781.5	3966.3	4157.3	4353.3	4553.3	4757.9	4966.9
18	3776.7	3963.[illegible]	4153.9	4349.1	4549.[illegible]	4753.4	4962.3
19	3772.4	3959.7	4149.5	4344.8	4544.5	4748.9	4957.7
20	3765.9	3955.[illegible]	4145.7	4341.9	4541.6	4744.8	4953.5
21	3763.0	3954.7	4141.3	4335.4	4534.5	4738.1	4946.1
22	3762.2	3947.7	4137.3	4332.4	4531.5	4734.9	4942.9
23	3758.9	3944.4	4134.3	4329.7	4527.7	4731.1	4939.0
24	3756.6	3942.[illegible]	4131.9	4325.3	4525.1	4728.5	4936.3
25	3756.4	3942.2	4132.6	4327.2	4523.4	4726.7	4936.4

TABLE 14(b) (CONTINUED)

CONFIG	Z=44	Z=45	Z=46	Z=47	Z=48	Z=49	Z=50
26	3754.2	3939.3	4129.1	4323.2	4521.3	4724.2	4933.6
27	3751.8	3936.5	4126.3	4320.2	4518.6	4721.5	4929.9
28	3751.7	3937.1	4123.7	4323.1	4513.8	4711.7	4919.8
29	3[illegible].7	3933.5	4181.1	4373.1	4579.6	4785.8	4996.4
30	3731.3	3937.2	4133.6	4334.9	4554.1	4759.8	4967.8
31	3777.5	3963.9	4154.7	4350.0	4549.9	4754.3	4963.2
32	3773.7	3959.3	4151.1	4345.3	4545.2	4749.5	4958.3
33	3[illegible].4	3955.8	4146.8	4341.7	4541.4	4745.6	4954.3
34	3765.8	3951.5	4141.6	4336.2	4535.3	4739.9	4947.6
35	3743.2	3948.6	4132.7	4333.3	4532.3	4735.8	4943.8
36	3750.7	3946.1	4135.1	4329.5	4528.5	4731.9	4939.8
37	3757.5	3942.9	4132.8	4327.2	4526.[illegible]	4729.4	4937.2
38	3758.8	3941.4	4132.6	4326.7	4523.5	4728.7	4936.3
39	3755.2	3943.[illegible]	4131.[illegible]	4324.4	4522.8	4725.3	4934.[illegible]
40	3752.5	3937.7	4127.2	4321.9	4519.2	4722.4	4929.9
41	3751.2	3942.3	4126.2	4327.7	4521.8	4714.4	4926.1
42	3761.7	3936.6	4179.1	4376.1	4577.5	4783.6	4994.2
43	3795.2	3982.9	4175.2	4372.6	4573.4	4779.3	4989.8
44	3794.2	3941.3	4174.1	4371.0	4572.3	4778.2	4988.7
45	3773.3	3976.[illegible]	4168.2	4365.6	4566.7	4772.5	4982.8
46	3776.[illegible]	3982.2	4157.2	4348.4	4548.2	4752.6	4961.5
47	3774.3	3962.6	4151.3	4345.6	4545.4	4753.7	4959.6
48	3770.2	3956.3	4146.8	4342.2	4541.7	4745.9	4954.6
49	3772.2	3958.4	4146.1	4344.2	4544.0	4748.2	4956.6
50	3771.6	3956.7	4147.4	4343.5	4542.2	4746.4	4955.0

TABLE 14(b) (CONTINUED)

CONFIG	Z=44	Z=45	Z=46	Z=47	Z=48	Z=49	Z=50
51	3766.6	3952.6	4143.1	4338.1	4537.6	4741.6	4950.2
52	3767.8	3953.9	4144.5	4339.6	4539.3	4743.4	4952.1
53	3766.4	3952.5	4143.1	4338.2	4537.8	4741.9	4950.5
54	3762.2	3948.1	4139.6	4333.5	4533.0	4736.9	4945.4
55	3764.5	3950.5	4141.9	4336.0	4535.5	4739.5	4948.1
56	3762.9	3948.9	4139.4	4334.4	4533.9	4737.9	4946.4
57	3758.9	3944.8	4135.1	4329.9	4529.3	4733.1	4941.5
58	3760.7	3946.2	4136.2	4331.6	4529.4	4733.9	4942.9
59	3759.1	3944.5	4134.5	4328.9	4527.8	4731.2	4939.1
60	3755.2	3940.6	4130.3	4324.6	4523.4	4726.6	4934.3
61	3758.0	3943.4	4133.3	4327.8	4526.7	4730.0	4937.8
62	3756.4	3941.7	4131.5	4325.9	4524.8	4728.1	4935.8
63	3752.6	3937.7	4127.5	4321.7	4520.5	4723.7	4931.2
64	3754.6	3939.9	4129.7	4324.0	4522.8	4726.0	4933.8
65	3753.0	3938.3	4128.1	4322.3	4521.1	4724.3	4932.0
66	3749.2	3934.4	4124.0	4318.1	4516.7	4719.8	4927.3
67	3752.6	3937.7	4127.4	4321.7	4520.4	4723.5	4931.2
68	3750.8	3936.0	4125.7	4319.9	4518.6	4721.7	4929.4
69	3747.1	3932.2	4121.7	4315.7	4514.3	4717.3	4924.8
70	3753.4	3938.0	4127.3	4321.8	4518.4	4723.0	4930.1
71	3749.8	3935.9	4125.0	4319.1	4518.5	4720.5	4929.0
72	3747.0	3932.6	4121.1	4315.6	4513.1	4716.1	4924.2
73	3750.1	3935.5	4124.6	4318.5	4517.1	4719.3	4928.1
74	3748.3	3933.2	4123.1	4317.4	4514.7	4717.4	4925.7
75	3744.9	3929.6	4119.3	4312.7	4510.7	4713.1	4920.9

TABLE 14(b) (CONCLUDED)

CONFIG	Z=44	Z=45	Z=46	Z=47	Z=48	Z=49	Z=50
76	3747.7	3932.5	4121.8	4315.7	4513.8	4716.7	4924.0
77	3745.9	3931.7	4120.1	4313.8	4512.1	4714.9	4922.2
78	3742.2	3926.9	4116.1	4309.7	4507.8	4710.5	4917.4
79	3751.5	3933.3	4121.9	4314.3	4516.2	4707.6	4919.8
80	3743.9	3924.8	4115.2	4313.4	4513.8	4714.4	4921.5
81	3756.5	3927.9	4117.6	4318.1	4506.9	4715.3	4909.8

TABLE 15(a)–CONFIGURATION LIST FOR 16 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S	2S	2P	3S	3P	3D	4S	4P	4D	4F	5S	5P	5D	5F	6S	6P	6D	7S
GROUND CONFIGURATION																			
1		2	2	6	2	4													
ONE-ELECTRON EXCITED CONFIGURATIONS																			
2	ODD	2	2	6	2	3	1	0	0	0	0	0	0	0	0	0	0	0	0
3	ODD	2	2	6	2	3	0	1	0	0	0	0	0	0	0	0	0	0	0
4		2	2	6	2	3	0	0	1	0	0	0	0	0	0	0	0	0	0
5	ODD	2	2	6	2	3	0	0	0	1	0	0	0	0	0	0	0	0	0
6		2	2	6	2	3	0	0	0	0	1	0	0	0	0	0	0	0	0
7	ODD	2	2	6	2	3	0	0	0	0	0	1	0	0	0	0	0	0	0
8		2	2	6	2	3	0	0	0	0	0	0	1	0	0	0	0	0	0
9	ODD	2	2	6	2	3	0	0	0	0	0	0	0	1	0	0	0	0	0
10		2	2	6	2	3	0	0	0	0	0	0	0	0	1	0	0	0	0
11	ODD	2	2	6	2	3	0	0	0	0	0	0	0	0	0	1	0	0	0
12		2	2	6	2	3	0	0	0	0	0	0	0	0	0	0	1	0	0
13	ODD	2	2	6	2	3	0	0	0	0	0	0	0	0	0	0	0	1	0
14	ODD	2	2	6	2	3	0	0	0	0	0	0	0	0	0	0	0	0	1
15	ODD	2	2	6	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0
16		2	2	6	1	4	1	0	0	0	0	0	0	0	0	0	0	0	0
17		2	2	6	1	4	0	1	0	0	0	0	0	0	0	0	0	0	0
18	ODD	2	2	6	1	4	0	0	1	0	0	0	0	0	0	0	0	0	0
19		2	2	6	1	4	0	0	0	1	0	0	0	0	0	0	0	0	0
20	ODD	2	2	6	1	4	0	0	0	0	1	0	0	0	0	0	0	0	0
21		2	2	6	1	4	0	0	0	0	0	1	0	0	0	0	0	0	0
22	ODD	2	2	6	1	4	0	0	0	0	0	0	1	0	0	0	0	0	0
23		2	2	6	1	4	0	0	0	0	0	0	0	1	0	0	0	0	0
24	ODD	2	2	6	1	4	0	0	0	0	0	0	0	0	1	0	0	0	0
25		2	2	6	1	4	0	0	0	0	0	0	0	0	0	1	0	0	0
26	ODD	2	2	6	1	4	0	0	0	0	0	0	0	0	0	0	1	0	0
27		2	2	6	1	4	0	0	0	0	0	0	0	0	0	0	0	1	0
28		2	2	6	1	4	0	0	0	0	0	0	0	0	0	0	0	0	1
TWO-ELECTRON EXCITED CONFIGURATIONS																			
29		2	2	6	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
30		2	2	6	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0
31	ODD	2	2	6	2	2	1	0	1	0	0	0	0	0	0	0	0	0	0
32		2	2	6	2	2	1	0	0	1	0	0	0	0	0	0	0	0	0
33	ODD	2	2	6	2	2	1	0	0	0	1	0	0	0	0	0	0	0	0
34		2	2	6	2	2	1	0	0	0	0	1	0	0	0	0	0	0	0
35	ODD	2	2	6	2	2	1	0	0	0	0	0	1	0	0	0	0	0	0
36		2	2	6	2	2	1	0	0	0	0	0	0	1	0	0	0	0	0
37	ODD	2	2	6	2	2	1	0	0	0	0	0	0	0	1	0	0	0	0
38		2	2	6	2	2	1	0	0	0	0	0	0	0	0	1	0	0	0
39	ODD	2	2	6	2	2	1	0	0	0	0	0	0	0	0	0	1	0	0
40		2	2	6	2	2	1	0	0	0	0	0	0	0	0	0	0	1	0
41		2	2	6	2	2	1	0	0	0	0	0	0	0	0	0	0	0	1
42		2	2	6	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
43	ODD	2	2	6	1	3	2	0	0	0	0	0	0	0	0	0	0	0	0
44	ODD	2	2	6	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0
45		2	2	6	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0
46	ODD	2	2	6	1	3	1	1	0	0	0	0	0	0	0	0	0	0	0
47	ODD	2	2	6	0	5	0	1	0	0	0	0	0	0	0	0	0	0	0

TABLE 15(a) (CONCLUDED)

48		2	2	6	0	4	1	1	0	0	0	0	0	0	0	0	0	0	0
49		2	2	6	1	3	1	0	1	0	0	0	0	0	0	0	0	0	0
50		2	2	6	0	5	0	0	1	0	0	0	0	0	0	0	0	0	0
51	ODD	2	2	6	0	4	1	0	1	0	0	0	0	0	0	0	0	0	0
52	ODD	2	2	6	1	3	1	0	0	1	0	0	0	0	0	0	0	0	0
53	ODD	2	2	6	0	5	0	0	0	1	0	0	0	0	0	0	0	0	0
54		2	2	6	0	4	1	0	0	1	0	0	0	0	0	0	0	0	0
55		2	2	6	1	3	1	0	0	0	1	0	0	0	0	0	0	0	0
56		2	2	6	0	5	0	0	0	0	1	0	0	0	0	0	0	0	0
57	ODD	2	2	6	0	4	1	0	0	0	1	0	0	0	0	0	0	0	0
58	ODD	2	2	6	1	3	1	0	0	0	0	1	0	0	0	0	0	0	0
59	ODD	2	2	6	0	5	0	0	0	0	0	1	0	0	0	0	0	0	0
60		2	2	6	0	4	1	0	0	0	0	1	0	0	0	0	0	0	0
61		2	2	6	1	3	1	0	0	0	0	0	1	0	0	0	0	0	0
62		2	2	6	0	5	0	0	0	0	0	0	1	0	0	0	0	0	0
63	ODD	2	2	6	0	4	1	0	0	0	0	0	1	0	0	0	0	0	0
64	ODD	2	2	6	1	3	1	0	0	0	0	0	0	1	0	0	0	0	0
65	ODD	2	2	6	0	5	0	0	0	0	0	0	0	1	0	0	0	0	0
66		2	2	6	0	4	1	0	0	0	0	0	0	1	0	0	0	0	0
67		2	2	6	1	3	1	0	0	0	0	0	0	0	1	0	0	0	0
68		2	2	6	0	5	0	0	0	0	0	0	0	0	1	0	0	0	0
69	ODD	2	2	6	0	4	1	0	0	0	0	0	0	0	1	0	0	0	0
70	ODD	2	2	6	1	3	1	0	0	0	0	0	0	0	0	1	0	0	0
71	ODD	2	2	6	0	5	0	0	0	0	0	0	0	0	0	1	0	0	0
72		2	2	6	0	4	1	0	0	0	0	0	0	0	0	1	0	0	0
73		2	2	6	1	3	1	0	0	0	0	0	0	0	0	0	1	0	0
74		2	2	6	0	5	0	0	0	0	0	0	0	0	0	0	1	0	0
75	ODD	2	2	6	0	4	1	0	0	0	0	0	0	0	0	0	1	0	0
76	ODD	2	2	6	1	3	1	0	0	0	0	0	0	0	0	0	0	1	0
77	ODD	2	2	6	0	5	0	0	0	0	0	0	0	0	0	0	0	1	0
78		2	2	6	0	4	1	0	0	0	0	0	0	0	0	0	0	1	0
79	ODD	2	2	6	1	3	1	0	0	0	0	0	0	0	0	0	0	0	1
80	ODD	2	2	6	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1
81		2	2	6	0	4	1	0	0	0	0	0	0	0	0	0	0	0	1

TABLE 15(b)–16 ELECTRONS

CONFIG	Z=32	Z=33	Z=34	Z=35	Z=36	Z=37	Z=38
1	1930.9	2066.8	2207.4	2352.7	2502.7	2657.3	2816.5
2	1927.6	2063.4	2203.8	2348.9	2498.7	2653.1	2812.2
3	1921.4	2056.4	2196.0	2340.2	2489.0	2642.3	2800.3
4	1918.7	2053.5	2193.0	2337.2	2485.9	2639.2	2797.1
5	1915.6	2050.3	2189.7	2333.6	2482.2	2635.4	2793.2
6	1913.3	2047.9	2187.1	2331.0	2479.4	2632.5	2790.2
7	1914.8	2048.9	2187.9	2331.4	2479.6	2632.4	2789.7
8	1912.8	2046.8	2185.7	2329.2	2477.3	2630.0	2787.3
9	1910.2	2044.4	2183.2	2326.6	2474.6	2627.2	2784.4
10	1908.8	2042.9	2181.6	2324.9	2472.8	2625.4	2782.4
11	1911.2	2044.7	2182.9	2326.9	2474.2	2626.9	2786.1
12	1909.0	2043.4	2182.0	2324.7	2473.7	2625.3	2781.8
13	1907.3	2041.4	2179.8	2322.9	2470.3	2622.7	2779.6
14	1907.9	2038.6	2183.6	2321.0	2458.4	2622.6	2785.4
15	1926.8	2062.5	2202.9	2348.0	2497.7	2652.1	2811.2
16	1923.8	2059.4	2199.6	2344.5	2494.1	2648.3	2807.2
17	1917.7	2052.5	2191.9	2335.9	2484.5	2637.7	2795.4
18	1915.0	2049.7	2189.0	2332.9	2481.4	2634.5	2792.2
19	1911.9	2046.4	2185.6	2329.4	2477.8	2630.8	2786.4
20	1909.7	2044.1	2183.1	2326.8	2475.0	2627.9	2785.4
21	1910.9	2045.1	2183.9	2327.3	2475.2	2627.8	2785.0
22	1908.9	2042.9	2181.7	2325.0	2472.9	2625.4	2782.6
23	1906.6	2040.7	2179.3	2322.5	2470.3	2622.7	2779.7
24	1905.2	2039.2	2177.7	2320.8	2468.6	2620.9	2777.8
25	1907.5	2040.7	2178.6	2323.5	2470.6	2621.8	2780.7

TABLE 15(b) (CONTINUED)

CONFIG	Z=32	Z=33	Z=34	Z=35	Z=36	Z=37	Z=38
26	1905.7	2039.6	2178.3	2320.9	2468.8	2620.6	2777.5
27	1903.8	2037.7	2175.9	2318.9	2466.3	2618.4	2775.0
28	1906.0	2038.3	2178.0	2309.1	2467.1	2623.0	2782.7
29	1924.2	2059.7	2200.0	2344.9	2494.8	2648.7	2807.6
30	1918.4	2053.2	2192.7	2336.7	2485.3	2638.6	2796.3
31	1915.8	2050.5	2189.8	2333.8	2482.3	2635.4	2793.2
32	1912.4	2046.9	2186.1	2329.9	2478.3	2631.4	2789.0
33	1910.4	2044.9	2183.9	2327.6	2475.9	2628.8	2786.3
34	1911.7	2045.9	2184.7	2328.1	2476.1	2628.7	2785.9
35	1909.6	2043.8	2182.6	2325.8	2473.9	2626.4	2783.6
36	1907.3	2041.4	2180.0	2323.3	2471.1	2623.5	2780.5
37	1906.1	2040.0	2178.6	2321.7	2469.5	2621.8	2778.7
38	1907.8	2042.5	2180.5	2323.0	2471.4	2624.0	2780.2
39	1906.6	2040.8	2178.7	2321.8	2469.8	2622.2	2778.5
40	1904.4	2038.3	2176.8	2319.7	2467.2	2619.0	2776.1
41	1900.3	2039.8	2191.2	2311.6	2466.4	2615.8	2784.1
42	1922.4	2057.9	2198.1	2343.0	2492.5	2646.7	2805.5
43	1920.7	2056.0	2196.1	2340.8	2490.2	2644.3	2803.0
44	1919.8	2055.2	2195.2	2339.9	2489.2	2643.3	2801.9
45	1917.0	2052.1	2192.0	2336.5	2485.7	2639.6	2798.1
46	1915.0	2049.6	2188.9	2332.8	2481.2	2634.2	2791.8
47	1913.8	2048.3	2187.6	2331.3	2479.7	2632.7	2790.3
48	1911.4	2045.8	2184.9	2328.5	2476.7	2629.6	2787.0
49	1912.4	2046.9	2186.0	2329.6	2478.2	2631.1	2788.7
50	1911.1	2045.5	2184.6	2328.3	2476.7	2629.6	2787.1

TABLE 15(b) (CONTINUED)

CONFIG	Z=32	Z=33	Z=34	Z=35	Z=36	Z=37	Z=38
51	1908.8	2043.1	2182.0	2325.6	2473.8	2626.6	2783.9
52	1909.0	2043.4	2182.4	2326.0	2474.3	2627.1	2784.6
53	1908.0	2042.4	2181.3	2324.9	2473.1	2625.9	2783.3
54	1905.5	2039.7	2178.5	2321.9	2469.9	2622.6	2779.9
55	1907.1	2041.4	2180.2	2323.7	2471.8	2624.6	2781.9
56	1905.8	2040.0	2178.9	2322.3	2470.4	2623.1	2780.4
57	1903.6	2037.6	2176.3	2319.6	2467.8	2620.1	2777.2
58	1908.3	2042.4	2181.0	2324.3	2472.1	2624.5	2781.5
59	1907.1	2041.0	2179.6	2322.8	2470.6	2623.0	2779.9
60	1904.8	2038.7	2177.1	2320.1	2467.8	2620.0	2776.8
61	1906.4	2040.3	2178.9	2322.1	2469.9	2622.2	2779.2
62	1905.0	2039.0	2177.5	2320.7	2468.3	2620.6	2777.5
63	1902.9	2036.7	2175.1	2318.0	2465.6	2617.7	2774.5
64	1904.1	2037.9	2176.4	2319.5	2467.1	2619.4	2776.2
65	1902.9	2036.7	2175.1	2318.1	2465.7	2617.9	2774.7
66	1900.6	2034.3	2172.6	2315.4	2462.9	2615.0	2771.6
67	1902.8	2036.6	2175.0	2318.0	2465.5	2617.7	2774.4
68	1901.5	2035.2	2173.5	2316.5	2464.0	2616.1	2772.8
69	1899.4	2033.0	2171.1	2313.9	2461.3	2613.3	2769.9
70	1904.6	2036.1	2176.9	2319.3	2467.6	2619.6	2776.1
71	1903.3	2036.6	2175.7	2319.0	2465.9	2617.8	2774.7
72	1901.5	2035.4	2173.2	2315.9	2463.0	2615.0	2771.3
73	1903.6	2036.9	2176.2	2318.3	2466.7	2617.6	2773.9
74	1902.1	2035.7	2173.6	2316.5	2463.6	2616.2	2772.0
75	1899.5	2032.9	2171.3	2313.9	2461.3	2613.2	2769.3

TABLE 15(b) (CONTINUED)

CONFIG	Z=32	Z=33	Z=34	Z=35	Z=36	Z=37	Z=38
76	1901.3	2035.0	2173.2	2315.9	2463.2	2615.1	2771.7
77	1900.1	2033.8	2171.8	2314.4	2461.8	2613.8	2770.1
78	1898.0	2031.3	2169.4	2312.0	2459.C	2610.8	2767.2
79	1904.2	2034.9	2176.7	2313.1	2462.2	2617.6	2778.2
80	1901.1	2031.0	2173.8	2316.1	2463.9	2617.3	2768.1
81	190C.3	2037.8	2170.7	2314.8	2458.1	2611.0	2767.8

TABLE 15(b) (CONTINUED)

CONFIG	Z=39	Z=40	Z=41	Z=42	Z=43	Z=44	Z=45
1	2980.5	3145.1	3322.3	3500.3	3682.9	3870.2	4062.1
2	2976.0	3144.4	3317.5	3495.3	3677.7	3864.8	4056.6
3	2962.9	3130.2	3302.2	3478.8	3659.8	3845.6	4035.8
4	2959.6	3126.8	3298.6	3475.0	3656.0	3841.6	4031.8
5	2955.7	3122.7	3294.4	3470.7	3651.6	3837.2	4027.3
6	2952.5	3119.4	3290.9	3467.1	3648.0	3833.4	4023.4
7	2951.6	3118.2	3289.3	3465.0	3645.4	3830.3	4019.8
8	2949.1	3115.6	3286.6	3462.4	3642.5	3827.4	4016.8
9	2946.2	3112.5	3283.5	3459.1	3639.3	3824.0	4013.4
10	2944.1	3110.4	3281.3	3456.8	3636.9	3821.6	4010.9
11	2944.9	3110.3	3281.9	3457.1	3638.1	3822.4	4012.2
12	2943.3	3109.1	3279.4	3455.3	3635.2	3819.1	4007.3
13	2941.1	3107.0	3277.7	3453.0	3632.7	3816.8	4006.1
14	2939.1	3107.5	3282.8	3458.4	3631.8	3813.5	4002.2
15	2974.9	3143.3	3316.4	3494.1	3676.8	3863.6	4055.3
16	2970.8	3139.0	3311.9	3489.8	3671.7	3858.6	4050.2
17	2957.9	3125.0	3296.7	3473.1	3654.0	3839.5	4029.6
18	2954.6	3121.6	3293.2	3469.4	3650.2	3835.6	4025.6
19	2950.7	3117.5	3289.0	3465.1	3645.9	3831.2	4021.2
20	2947.5	3114.3	3285.6	3461.6	3642.3	3827.5	4017.3
21	2946.7	3113.1	3284.0	3459.6	3639.7	3824.5	4013.8
22	2944.1	3110.6	3281.3	3457.0	3636.9	3821.7	4010.8
23	2941.3	3107.5	3278.3	3453.7	3633.7	3818.2	4007.4
24	2939.3	3105.4	3276.1	3451.4	3631.4	3815.9	4005.0
25	2941.9	3105.7	3276.7	3452.2	3632.1	3816.3	4006.1

TABLE 15(b) (CONTINUED)

CONFIG	Z=39	Z=40	Z=41	Z=42	Z=43	Z=44	Z=45
26	2938.9	3104.5	3275.6	3450.1	3629.9	3813.9	4002.6
27	2936.2	3102.1	3272.4	3447.4	3627.1	3811.3	4000.1
28	2929.6	3103.6	3276.0	3443.2	3621.0	3808.4	4001.9
29	2971.2	3139.4	3312.3	3489.9	3672.2	3859.1	4050.6
30	2958.8	3128.9	3297.7	3474.1	3655.1	3840.6	4030.7
31	2955.6	3122.5	3294.2	3470.4	3651.2	3836.7	4026.7
32	2951.3	3118.2	3289.7	3465.8	3646.6	3831.9	4021.9
33	2948.4	3115.2	3286.6	3462.6	3643.2	3828.5	4018.3
34	2947.7	3114.0	3285.0	3460.6	3640.8	3825.5	4014.9
35	2945.1	3111.5	3282.5	3457.9	3638.0	3822.8	4011.9
36	2942.1	3108.3	3279.2	3454.6	3634.6	3819.2	4008.4
37	2940.3	3106.4	3277.1	3452.5	3632.4	3816.9	4006.0
38	2941.3	3106.0	3279.5	3452.9	3633.1	3816.4	4006.0
39	2939.2	3108.8	3275.9	3451.0	3631.2	3814.6	4003.1
40	2937.3	3103.1	3273.5	3448.5	3628.2	3812.4	4000.9
41	2936.6	3093.8	3274.5	3443.5	3623.9	3812.7	3999.9
42	2969.0	3137.2	3310.1	3487.6	3669.2	3856.6	4048.1
43	2966.4	3134.4	3307.1	3484.5	3666.6	3853.3	4044.7
44	2965.3	3133.3	3306.0	3483.4	3665.4	3852.1	4043.4
45	2961.3	3129.1	3301.6	3478.8	3660.7	3847.2	4038.4
46	2954.1	3121.1	3292.6	3468.9	3649.6	3834.9	4024.9
47	2952.5	3119.4	3291.0	3467.1	3647.8	3833.1	4023.0
48	2949.1	3115.8	3287.2	3463.2	3643.7	3828.9	4018.6
49	2950.9	3117.7	3289.1	3465.2	3645.8	3831.1	4020.9
50	2949.3	3116.0	3287.4	3463.4	3644.0	3829.2	4019.0

TABLE 15(b) (CONTINUED)

CONFIG	Z=39	Z=40	Z=41	Z=42	Z=43	Z=44	Z=45
51	2945.9	3112.6	3283.8	3459.6	3640.1	3825.2	4014.8
52	2946.7	3113.4	3284.7	3460.7	3641.2	3826.4	4016.2
53	2945.4	3112.0	3283.3	3459.2	3639.7	3824.9	4014.6
54	2941.8	3108.3	3279.4	3455.2	3635.6	3820.6	4010.2
55	2943.8	3110.4	3281.6	3457.5	3637.9	3823.0	4012.7
56	2942.3	3108.8	3280.0	3455.8	3636.2	3821.2	4010.9
57	2939.0	3105.4	3276.4	3452.0	3632.3	3817.2	4006.6
58	2943.1	3109.3	3280.1	3455.5	3635.5	3820.1	4009.3
59	2941.5	3107.6	3278.4	3453.8	3633.7	3818.2	4007.4
60	2938.2	3104.2	3274.9	3450.1	3629.9	3814.3	4003.3
61	2940.6	3106.9	3277.6	3452.9	3632.7	3817.3	4006.4
62	2939.0	3105.2	3275.7	3451.1	3630.9	3815.5	4004.6
63	2935.8	3101.8	3272.3	3447.6	3627.2	3811.5	4000.4
64	2937.7	3103.7	3274.3	3449.6	3629.4	3813.8	4002.8
65	2936.1	3102.1	3272.7	3447.9	3627.7	3812.0	4001.0
66	2932.9	3098.7	3269.2	3444.2	3623.6	3808.1	3996.9
67	2935.8	3101.8	3272.3	3447.5	3627.2	3811.6	4000.5
68	2934.2	3100.1	3270.6	3445.7	3625.4	3809.7	3998.6
69	2931.0	3096.8	3267.2	3442.1	3621.7	3805.9	3994.6
70	2937.7	3104.3	3273.6	3448.7	3628.6	3811.6	4000.9
71	2936.5	3101.3	3272.2	3446.9	3627.2	3809.9	3999.9
72	2933.1	3098.1	3269.3	3442.5	3623.1	3806.3	3995.3
73	2935.0	3101.2	3271.6	3446.1	3626.0	3809.9	3998.1
74	2933.6	3099.1	3269.9	3444.3	3623.8	3807.6	3996.5
75	2930.4	3096.1	3265.9	3441.2	3620.2	3804.2	3992.6

TABLE 15(b) (CONTINUED)

CONFIG	Z=39	Z=40	Z=41	Z=42	Z=43	Z=44	Z=45
76	2932.8	3098.5	3268.6	3443.6	3623.1	3807.0	3995.6
77	2931.1	3096.7	3267.2	3441.8	3621.1	3805.2	3993.7
78	2928.1	3093.5	3263.6	3438.2	3617.5	3801.3	3989.8
79	2927.2	3097.5	3266.3	3440.5	3624.2	3816.5	4002.0
80	2932.5	3100.0	3272.0	3440.7	3617.1	3802.0	3998.9
81	2927.4	3095.0	3264.0	3433.6	3614.3	3800.4	3991.0

TABLE 15(b) (CONTINUED)

CONFIG	Z=46	Z=47	Z=48	Z=49	Z=50	Z=51	Z=52
1	4256.7	4460.0	4665.9	4876.5	5091.8	5311.7	5536.3
2	4253.0	4454.1	4659.8	4870.3	5085.4	5305.1	5529.6
3	4230.7	4430.2	4634.5	4843.4	5056.5	5275.0	5497.7
4	4226.5	4425.9	4630.0	4838.7	5052.1	5270.0	5492.5
5	4222.1	4421.4	4625.4	4834.1	5047.3	5265.1	5487.6
6	4218.1	4417.3	4621.2	4829.7	5042.8	5260.6	5483.0
7	4213.9	4412.6	4615.9	4823.8	5036.3	5253.4	5475.1
8	4210.8	4409.4	4612.8	4820.7	5033.1	5250.1	5471.6
9	4207.3	4405.8	4608.9	4816.7	5029.0	5246.0	5467.5
10	4204.8	4403.2	4606.3	4813.9	5026.2	5243.1	5464.5
11	4206.1	4403.3	4607.3	4812.8	5027.0	5240.0	5464.8
12	4202.2	4400.8	4603.6	4809.6	5022.7	5239.4	5458.6
13	4199.6	4397.6	4600.1	4807.6	5019.0	5235.7	5456.5
14	4199.5	4393.4	4605.3	4808.2	5019.9	5224.6	5445.9
15	4251.7	4452.8	4658.5	4868.9	5084.0	5303.7	5528.1
16	4246.4	4447.3	4652.9	4863.1	5078.0	5297.6	5521.8
17	4224.3	4423.7	4627.7	4836.4	5049.7	5267.7	5490.1
18	4220.2	4419.4	4623.3	4831.8	5044.9	5262.7	5485.0
19	4215.7	4414.9	4618.7	4827.2	5040.2	5257.9	5480.1
20	4211.8	4410.9	4614.6	4822.9	5035.8	5253.4	5475.6
21	4207.7	4406.2	4609.4	4817.1	5029.4	5246.2	5467.8
22	4204.7	4403.2	4606.2	4813.9	5026.1	5243.0	5464.3
23	4201.1	4399.5	4602.4	4810.0	5022.1	5238.9	5460.2
24	4198.6	4396.9	4599.8	4807.3	5019.3	5236.0	5457.3
25	4198.3	4396.4	4600.1	4806.5	5018.8	5234.7	5456.1

TABLE 15(b) (CONTINUED)

CONFIG	Z=46	Z=47	Z=48	Z=49	Z=50	Z=51	Z=52
26	4198.9	4394.2	4596.9	4804.3	5016.0	5232.3	5452.9
27	4193.4	4391.2	4593.7	4800.8	5012.8	5228.8	5449.4
28	4194.6	4387.3	4597.0	4797.0	5015.5	5231.0	5447.2
29	4246.9	4447.8	4653.3	4863.6	5078.5	5298.1	5522.3
30	4225.4	4424.7	4628.8	4837.6	5050.9	5268.8	5491.3
31	4221.3	4420.6	4624.4	4833.0	5046.1	5263.9	5486.3
32	4216.5	4415.7	4619.5	4828.0	5041.1	5258.7	5481.0
33	4212.8	4411.9	4615.6	4824.0	5036.9	5254.5	5476.7
34	4208.8	4407.3	4610.5	4818.2	5030.5	5247.4	5469.0
35	4205.8	4404.3	4607.4	4815.1	5027.3	5244.2	5465.7
36	4202.1	4400.5	4603.5	4811.1	5023.2	5240.0	5461.4
37	4199.7	4398.0	4600.9	4808.4	5020.5	5237.2	5458.5
38	4200.1	4398.7	4598.9	4805.8	5018.9	5237.2	5458.5
39	4197.3	4396.0	4598.9	4805.2	5016.8	5232.4	5452.8
40	4194.5	4392.3	4595.0	4802.1	5013.5	5230.0	5450.6
41	4193.1	4392.3	4561.4	4801.6	5021.4	5229.4	5450.8
42	4244.3	4445.2	4650.7	4860.9	5078.7	5295.2	5519.4
43	4240.7	4441.4	4646.8	4856.9	5071.6	5291.0	5515.0
44	4239.5	4440.2	4645.5	4855.5	5070.2	5289.6	5513.6
45	4234.2	4434.7	4639.9	4849.6	5064.3	5283.5	5507.3
46	4219.4	4418.6	4622.5	4831.1	5044.2	5261.9	5484.3
47	4217.5	4416.7	4620.5	4829.0	5042.1	5259.8	5482.1
48	4213.0	4412.1	4615.8	4824.1	5037.0	5254.5	5476.6
49	4215.4	4414.5	4618.2	4826.5	5039.5	5257.1	5479.3
50	4213.4	4412.5	4616.1	4824.4	5037.4	5254.9	5477.1

TABLE 15(b) (CONTINUED)

CONFIG	Z=46	Z=47	Z=48	Z=49	Z=50	Z=51	Z=52
51	4209.1	4408.0	4611.5	4819.6	5032.4	5249.8	5471.8
52	4210.6	4409.7	4613.3	4821.6	5034.8	5252.0	5474.0
53	4209.0	4408.0	4611.6	4819.9	5032.7	5250.1	5472.2
54	4204.4	4403.2	4606.7	4814.6	5027.5	5244.8	5466.6
55	4207.0	4405.9	4609.4	4817.6	5030.4	5247.8	5469.8
56	4205.1	4404.0	4607.5	4815.6	5028.4	5245.7	5467.7
57	4200.8	4399.5	4602.8	4810.8	5023.4	5240.6	5462.4
58	4203.0	4401.4	4604.4	4811.9	5024.1	5240.8	5462.1
59	4201.1	4399.4	4602.4	4809.9	5022.0	5238.7	5460.0
60	4196.8	4395.0	4597.8	4805.2	5017.1	5233.7	5454.8
61	4200.1	4398.4	4601.3	4808.9	5020.9	5237.5	5458.8
62	4198.2	4396.3	4599.2	4806.8	5018.8	5235.4	5456.6
63	4194.0	4392.0	4594.7	4802.2	5014.0	5230.4	5451.6
64	4196.4	4394.6	4597.4	4804.8	5016.8	5233.4	5454.6
65	4194.6	4392.8	4595.5	4802.9	5014.8	5231.4	5452.5
66	4190.3	4388.3	4590.9	4798.1	5010.0	5226.4	5447.4
67	4194.0	4392.2	4594.9	4802.2	5014.1	5230.6	5451.8
68	4192.1	4390.2	4592.9	4800.2	5012.0	5228.5	5449.6
69	4188.0	4385.9	4588.4	4795.6	5007.3	5223.6	5444.5
70	4194.5	4392.2	4595.3	4800.6	5012.9	5227.5	5450.6
71	4192.4	4390.4	4592.6	4800.0	5011.5	5226.6	5446.8
72	4188.7	4386.4	4588.6	4796.6	5007.1	5222.0	5442.9
73	4192.0	4390.3	4592.5	4798.9	5010.3	5226.5	5447.0
74	4189.7	4387.7	4589.9	4796.7	5008.2	5224.5	5445.1
75	4185.7	4382.8	4585.4	4792.4	5003.3	5220.0	5439.8

TABLE 15(b) (CONCLUDED)

CONFIG	Z=46	Z=47	Z=48	Z=49	Z=50	Z=51	Z=52
76	4185.0	4386.7	4588.8	4795.8	5007.4	5223.4	5444.1
77	4182.9	4384.3	4586.6	4793.7	5005.4	5221.5	5441.9
78	4182.8	4380.3	4582.4	4789.1	5000.9	5216.3	5436.9
79	4187.3	4385.1	4583.9	4797.1	5006.3	5223.5	5446.0
80	4184.9	4382.1	4578.2	4797.8	5005.3	5221.5	5445.7
81	4188.5	4383.7	4575.8	4789.0	5001.3	5212.3	5431.1

TABLE 16(a)–CONFIGURATION LIST FOR 17 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S 2S 2P 3S 3P 3D 4S 4P 4D 4F 5S 5P 5D 5F 6S 6P 6D 7S
GROUND CONFIGURATION		
1	ODD	2 2 6 2 5
ONE-ELECTRON EXCITED CONFIGURATIONS		
2		2 2 6 2 4 1 0 0 0 0 0 0 0 0 0 0 0 0
3		2 2 6 2 4 0 1 0 0 0 0 0 0 0 0 0 0 0
4	ODD	2 2 6 2 4 0 0 1 0 0 0 0 0 0 0 0 0 0
5		2 2 6 2 4 0 0 0 1 0 0 0 0 0 0 0 0 0
6	ODD	2 2 6 2 4 0 0 0 0 1 0 0 0 0 0 0 0 0
7		2 2 6 2 4 0 0 0 0 0 1 0 0 0 0 0 0 0
8	ODD	2 2 6 2 4 0 0 0 0 0 0 1 0 0 0 0 0 0
9		2 2 6 2 4 0 0 0 0 0 0 0 1 0 0 0 0 0
10	ODD	2 2 6 2 4 0 0 0 0 0 0 0 0 1 0 0 0 0
11		2 2 6 2 4 0 0 0 0 0 0 0 0 0 1 0 0 0
12	ODD	2 2 6 2 4 0 0 0 0 0 0 0 0 0 0 1 0 0
13		2 2 6 2 4 0 0 0 0 0 0 0 0 0 0 0 1 0
14		2 2 6 2 4 0 0 0 0 0 0 0 0 0 0 0 0 1
15		2 2 6 1 6 0 0 0 0 0 0 0 0 0 0 0 0 0
16	ODD	2 2 6 1 5 1 0 0 0 0 0 0 0 0 0 0 0 0
17	ODD	2 2 6 1 5 0 1 0 0 0 0 0 0 0 0 0 0 0
18		2 2 6 1 5 0 0 1 0 0 0 0 0 0 0 0 0 0
19	ODD	2 2 6 1 5 0 0 0 1 0 0 0 0 0 0 0 0 0
20		2 2 6 1 5 0 0 0 0 1 0 0 0 0 0 0 0 0
21	ODD	2 2 6 1 5 0 0 0 0 0 1 0 0 0 0 0 0 0
22		2 2 6 1 5 0 0 0 0 0 0 1 0 0 0 0 0 0
23	ODD	2 2 6 1 5 0 0 0 0 0 0 0 1 0 0 0 0 0
24		2 2 6 1 5 0 0 0 0 0 0 0 0 1 0 0 0 0
25	ODD	2 2 6 1 5 0 0 0 0 0 0 0 0 0 1 0 0 0
26		2 2 6 1 5 0 0 0 0 0 0 0 0 0 0 1 0 0
27	ODD	2 2 6 1 5 0 0 0 0 0 0 0 0 0 0 0 1 0
28	ODD	2 2 6 1 5 0 0 0 0 0 0 0 0 0 0 0 0 1
TWO-ELECTRON EXCITED CONFIGURATIONS		
29	ODD	2 2 6 2 3 2 0 0 0 0 0 0 0 0 0 0 0 0
30	ODD	2 2 6 2 3 1 1 0 0 0 0 0 0 0 0 0 0 0
31		2 2 6 2 3 1 0 1 0 0 0 0 0 0 0 0 0 0
32	ODD	2 2 6 2 3 1 0 0 1 0 0 0 0 0 0 0 0 0
33		2 2 6 2 3 1 0 0 0 1 0 0 0 0 0 0 0 0
34	ODD	2 2 6 2 3 1 0 0 0 0 1 0 0 0 0 0 0 0
35		2 2 6 2 3 1 0 0 0 0 0 1 0 0 0 0 0 0
36	ODD	2 2 6 2 3 1 0 0 0 0 0 0 1 0 0 0 0 0
37		2 2 6 2 3 1 0 0 0 0 0 0 0 1 0 0 0 0
38	ODD	2 2 6 2 3 1 0 0 0 0 0 0 0 0 1 0 0 0
39		2 2 6 2 3 1 0 0 0 0 0 0 0 0 0 1 0 0
40	ODD	2 2 6 2 3 1 0 0 0 0 0 0 0 0 0 0 1 0
41	ODD	2 2 6 2 3 1 0 0 0 0 0 0 0 0 0 0 0 1
42		2 2 6 1 4 2 0 0 0 0 0 0 0 0 0 0 0 0
43		2 2 6 0 6 1 0 0 0 0 0 0 0 0 0 0 0 0
44	ODD	2 2 6 0 5 2 0 0 0 0 0 0 0 0 0 0 0 0
45		2 2 6 1 4 1 1 0 0 0 0 0 0 0 0 0 0 0
46		2 2 6 0 6 0 1 0 0 0 0 0 0 0 0 0 0 0
47	ODD	2 2 6 0 5 1 1 0 0 0 0 0 0 0 0 0 0 0

TABLE 16(a) (CONCLUDED)

48	[illegible]	2	2	6	1	4	1	0	1	0	0	0	0	0	0	0	0	0	0
49	[illegible]	2	2	6	0	5	0	0	1	0	0	0	0	0	0	0	0	0	0
50	[illegible]	2	2	6	0	5	1	0	1	0	0	0	0	0	0	0	0	0	0
51		2	2	6	1	4	1	0	0	1	0	0	0	0	0	0	0	0	0
52	[illegible]	2	2	6	0	6	0	0	0	1	0	0	0	0	0	0	0	0	0
53	[illegible]	2	2	6	0	5	1	0	0	1	0	0	0	0	0	0	0	0	0
54	[illegible]	2	2	6	1	4	1	0	0	0	1	0	0	0	0	0	0	0	0
55	[illegible]	2	2	6	0	6	0	0	0	0	1	0	0	0	0	0	0	0	0
56	[illegible]	2	2	6	0	5	1	0	0	0	1	0	0	0	0	0	0	0	0
57		2	2	6	1	4	1	0	0	0	0	1	0	0	0	0	0	0	0
58	[illegible]	2	2	6	0	6	0	0	0	0	0	1	0	0	0	0	0	0	0
59	[illegible]	2	2	6	0	5	1	0	0	0	0	1	0	0	0	0	0	0	0
60	[illegible]	2	2	6	1	4	1	0	0	0	0	0	1	0	0	0	0	0	0
61	[illegible]	2	2	6	0	6	0	0	0	0	0	0	1	0	0	0	0	0	0
62	[illegible]	2	2	6	0	5	1	0	0	0	0	0	1	0	0	0	0	0	0
63		2	2	6	1	4	1	0	0	0	0	0	0	1	0	0	0	0	0
64	[illegible]	2	2	6	0	6	0	0	0	0	0	0	0	1	0	0	0	0	0
65	[illegible]	2	2	6	0	5	1	0	0	0	0	0	0	1	0	0	0	0	0
66	[illegible]	2	2	6	1	4	1	0	0	0	0	0	0	1	0	0	0	0	0
67	[illegible]	2	2	6	0	6	0	0	0	0	0	0	0	1	0	0	0	0	0
68	[illegible]	2	2	6	0	5	1	0	0	0	0	0	0	1	0	0	0	0	0
69		2	2	6	1	4	1	0	0	0	0	0	0	0	1	0	0	0	0
70	[illegible]	2	2	6	0	6	0	0	0	0	0	0	0	0	1	0	0	0	0
71	[illegible]	2	2	6	0	5	1	0	0	0	0	0	0	0	1	0	0	0	0
72	[illegible]	2	2	6	1	4	1	0	0	0	0	0	0	0	0	1	0	0	0
73	[illegible]	2	2	6	0	6	0	0	0	0	0	0	0	0	0	1	0	0	0
74	[illegible]	2	2	6	0	5	1	0	0	0	0	0	0	0	0	1	0	0	0
75		2	2	6	1	4	1	0	0	0	0	0	0	0	0	0	1	0	0
76	[illegible]	2	2	6	0	6	0	0	0	0	0	0	0	0	0	0	1	0	0
77	[illegible]	2	2	6	0	5	1	0	0	0	0	0	0	0	0	0	1	0	0
78	[illegible]	2	2	6	1	4	1	0	0	0	0	0	0	0	0	0	0	1	0
79		2	2	6	0	6	0	0	0	0	0	0	0	0	0	0	0	1	0
80	[illegible]	2	2	6	0	5	1	0	0	0	0	0	0	0	0	0	0	1	0

TABLE 16(b)–17 ELECTRONS

CONFIG	Z=34	Z=35	Z=36	Z=37	Z=38	Z=39	Z=40
1	2233.5	2381.2	2533.8	2691.1	2853.2	3020.0	3191.7
2	2229.9	2377.5	2529.9	2687.0	2848.9	3015.6	3187.0
3	2222.7	2369.4	2520.8	2677.6	2837.8	3003.3	3173.6
4	2219.6	2366.3	2517.6	2673.7	2834.4	2999.9	3170.1
5	2216.2	2362.7	2513.9	2669.9	2830.5	2995.9	3166.0
6	2213.6	2360.0	2511.1	2666.8	2827.4	2992.6	3162.6
7	2214.9	2361.3	2511.8	2667.3	2827.5	2992.4	3162.0
8	2212.7	2358.7	2509.5	2664.8	2825.0	2989.8	3159.4
9	2211.2	2356.2	2506.8	2662.1	2822.2	2986.9	3156.3
10	2208.6	2354.4	2505.0	2660.2	2820.1	2984.8	3154.2
11	2211.4	2356.1	2506.7	2661.6	2821.9	2985.6	3155.8
12	2209.4	2354.7	2504.9	2660.7	2820.4	2984.7	3153.7
13	2207.0	2353.0	2503.0	2657.9	2817.7	2982.1	3151.2
14	2208.3	2356.4	2499.1	2655.2	2822.9	2986.8	3145.8
15	2228.8	2376.4	2528.7	2685.8	2847.7	3014.3	3185.7
16	2225.5	2372.9	2525.1	2682.3	2843.7	3010.2	3181.5
17	2218.4	2364.5	2516.1	2672.1	2832.7	2998.1	3168.2
18	2215.4	2361.8	2513.0	2668.8	2829.4	2994.7	3164.7
19	2212.0	2358.3	2509.3	2665.1	2825.5	2990.7	3160.6
20	2209.4	2355.6	2506.5	2662.1	2822.4	2987.4	3157.2
21	2210.7	2356.6	2507.2	2662.5	2822.5	2987.2	3156.7
22	2208.5	2354.4	2504.9	2660.1	2820.0	2984.8	3154.1
23	2206.1	2351.8	2502.3	2657.4	2817.2	2981.8	3151.0
24	2204.5	2350.1	2500.5	2655.5	2815.3	2979.7	3148.9
25	2205.8	2352.3	2503.8	2658.1	2816.9	2980.9	3150.4

TABLE 16(b) (CONTINUED)

CONFIG	Z=34	Z=35	Z=36	Z=37	Z=38	Z=39	Z=40
26	2204.9	2350.1	2501.0	2655.2	2815.2	2979.4	3148.4
27	2202.8	2348.4	2498.6	2653.4	2812.8	2977.0	3145.9
28	2200.4	2354.6	2502.2	2654.3	2812.6	2985.6	3141.7
29	2226.3	2373.5	2525.6	2682.6	2844.3	3010.8	3182.1
30	2219.3	2365.6	2517.2	2673.1	2833.8	2999.2	3169.3
31	2216.4	2362.9	2514.0	2669.9	2830.5	2995.8	3165.9
32	2212.6	2358.9	2510.0	2665.8	2826.2	2991.5	3161.4
33	2210.4	2356.6	2507.5	2663.1	2823.4	2988.5	3158.3
34	2211.7	2357.6	2508.2	2663.6	2823.6	2988.3	3157.8
35	2209.5	2355.4	2506.0	2661.1	2821.3	2985.9	3155.4
36	2206.9	2352.7	2503.2	2658.4	2818.2	2982.8	3152.1
37	2205.5	2351.2	2501.5	2656.6	2816.4	2980.9	3150.1
38	2207.0	2352.4	2503.3	2658.8	2819.7	2982.7	3151.7
39	2206.3	2351.6	2501.8	2656.5	2816.1	2980.0	3149.8
40	2203.7	2349.3	2499.6	2654.4	2813.8	2978.3	3147.0
41	2200.3	2352.2	2509.0	2656.9	2811.7	2995.4	3149.1
42	2222.0	2369.2	2521.2	2678.0	2839.5	3005.8	3176.9
43	2221.0	2368.1	2520.1	2676.8	2838.3	3004.6	3175.6
44	2217.8	2364.6	2516.5	2673.1	2834.4	3000.5	3171.4
45	2215.4	2361.7	2512.8	2668.6	2829.0	2994.2	3164.2
46	2214.1	2360.5	2511.6	2667.4	2827.9	2993.2	3163.2
47	2211.2	2357.3	2508.2	2663.7	2824.0	2989.0	3158.8
48	2212.5	2358.7	2509.7	2665.4	2825.8	2990.9	3160.8
49	2212.8	2359.1	2510.1	2665.9	2826.4	2991.6	3161.5
50	2208.3	2354.3	2505.1	2660.6	2820.8	2985.8	3155.4

TABLE 16(b) (CONTINUED)

CONFIG	Z=34	Z=35	Z=36	Z=37	Z=38	Z=39	Z=40
51	2208.7	2354.9	2505.7	2661.3	2821.6	2986.6	3156.4
52	2210.5	2356.7	2507.6	2663.3	2823.6	2988.8	3158.6
53	2204.6	2350.5	2501.2	2656.6	2816.7	2981.5	3151.1
54	2206.5	2352.5	2503.2	2658.7	2818.8	2983.7	3153.3
55	2208.8	2354.9	2505.8	2661.5	2821.8	2986.9	3156.8
56	2202.4	2348.2	2498.7	2653.9	2813.9	2978.6	3148.0
57	2207.8	2353.6	2504.0	2659.2	2819.4	2983.6	3152.8
58	2207.7	2353.5	2504.0	2659.2	2819.2	2983.8	3153.1
59	2203.7	2349.2	2499.5	2654.4	2814.1	2978.5	3147.6
60	2205.7	2351.3	2501.8	2656.8	2816.6	2981.1	3150.3
61	2206.8	2352.6	2503.1	2658.3	2818.2	2982.8	3152.1
62	2201.6	2347.1	2497.2	2652.2	2811.8	2976.1	3145.0
63	2203.1	2348.7	2499.0	2654.0	2813.7	2978.0	3147.2
64	2205.6	2351.3	2501.8	2656.9	2816.8	2981.3	3150.6
65	2199.1	2344.4	2494.5	2649.3	2808.8	2973.0	3141.9
66	2201.7	2347.2	2497.4	2652.3	2811.9	2976.2	3145.2
67	2204.6	2350.3	2500.7	2655.8	2815.6	2980.1	3149.3
68	2197.7	2342.9	2492.9	2647.6	2807.0	2971.2	3140.0
69	2204.2	2349.4	2499.0	2655.1	2813.8	2978.1	3146.6
70	2204.2	2349.7	2499.6	2654.8	2814.4	2978.7	3147.7
71	2199.5	2345.2	2494.6	2650.0	2808.7	2974.0	3141.1
72	2202.3	2347.4	2497.8	2652.2	2812.0	2976.2	3144.8
73	2203.7	2349.0	2499.4	2654.3	2813.9	2978.1	3147.1
74	2198.2	2343.0	2493.3	2647.5	2807.7	2970.9	3139.6
75	2201.0	2345.5	2495.3	2650.1	2809.4	2973.5	3142.1

TABLE 16(b) (CONTINUED)

CONFIG	Z=34	Z=35	Z=36	Z=37	Z=38	Z=39	Z=40
76	2203.1	2348.5	2498.6	2653.5	2813.0	2977.3	3146.2
77	2196.1	2341.2	2490.8	2645.5	2804.6	2968.5	3137.0
78	2197.2	2351.7	2497.4	2649.5	2805.6	2977.2	3141.1
79	2202.3	2347.6	2497.6	2652.3	2811.7	2975.8	3144.6
80	2196.5	2344.5	2490.2	2640.0	2801.9	2974.0	3132.7

TABLE 16(b) (CONTINUED)

CONFIG	Z=41	Z=42	Z=43	Z=44	Z=45	Z=46	Z=47
1	3368.1	3549.3	3735.3	3926.1	4121.6	4321.9	4527.0
2	3363.3	3544.4	3730.2	3920.8	4116.1	4316.3	4521.2
3	3348.8	3528.7	3713.2	3902.4	4096.3	4294.9	4498.3
4	3345.1	3524.8	3709.2	3898.4	4092.2	4290.7	4493.9
5	3340.9	3520.5	3704.8	3893.9	4087.6	4286.1	4489.3
6	3337.3	3516.8	3701.0	3889.9	4083.6	4281.9	4485.0
7	3336.4	3515.4	3699.2	3887.7	4080.8	4278.6	4481.2
8	3333.6	3512.6	3696.4	3884.7	4077.9	4275.5	4478.0
9	3330.5	3509.4	3693.0	3881.3	4074.3	4271.9	4474.3
10	3328.3	3507.1	3690.6	3878.8	4071.7	4269.3	4471.6
11	3329.4	3508.3	3691.9	3878.9	4072.7	4270.0	4472.3
12	3327.8	3506.8	3689.5	3878.3	4069.9	4268.6	4469.0
13	3324.9	3503.4	3686.7	3874.7	4067.2	4264.6	4466.4
14	3329.4	3495.4	3686.5	3874.6	4076.6	4260.7	4469.4
15	3362.0	3543.0	3728.7	3919.3	4114.6	4314.7	4519.6
16	3357.5	3538.4	3724.0	3914.4	4109.5	4309.5	4514.2
17	3343.1	3522.7	3707.1	3896.1	4089.8	4288.3	4491.4
18	3339.5	3518.9	3703.2	3892.1	4085.7	4284.0	4487.1
19	3335.3	3514.7	3698.8	3887.6	4081.2	4279.5	4482.5
20	3331.7	3511.0	3695.0	3883.7	4077.2	4275.4	4478.3
21	3330.8	3509.7	3693.2	3881.5	4074.5	4272.1	4474.5
22	3328.1	3507.0	3690.5	3878.6	4071.5	4269.0	4471.3
23	3325.0	3503.7	3687.1	3875.2	4068.0	4265.5	4467.7
24	3322.8	3501.4	3684.7	3872.7	4065.5	4262.9	4465.0
25	3324.1	3504.2	3685.7	3874.0	4066.0	4263.2	4464.6

TABLE 16(b) (CONTINUED)

CONFIG	Z=41	Z=42	Z=43	Z=44	Z=45	Z=46	Z=47
26	3322.3	3501.2	3683.5	3871.0	4063.8	4261.1	4462.5
27	3319.5	3497.8	3680.8	3868.5	4061.1	4257.9	4459.8
28	3320.6	3495.0	3685.4	3868.6	4065.2	4255.9	4455.1
29	3358.1	3539.0	3724.6	3915.0	4110.2	4310.1	4514.9
30	3344.2	3524.0	3708.4	3897.4	4091.1	4289.6	4492.8
31	3340.7	3520.2	3704.4	3893.4	4087.1	4285.4	4488.5
32	3336.1	3515.5	3699.7	3888.5	4082.1	4280.5	4483.5
33	3332.9	3512.2	3696.2	3885.0	4078.4	4276.6	4479.6
34	3332.0	3510.9	3694.5	3882.8	4075.7	4273.4	4475.8
35	3329.3	3508.2	3691.8	3880.0	4072.9	4270.4	4472.7
36	3326.1	3504.8	3688.2	3876.3	4069.2	4266.7	4468.9
37	3324.0	3502.7	3686.0	3874.0	4066.8	4264.2	4466.4
38	3325.6	3505.6	3687.8	3876.2	4066.5	4263.7	4467.6
39	3323.3	3502.9	3684.1	3873.0	4064.4	4262.3	4464.1
40	3321.7	3499.2	3682.3	3869.8	4062.4	4259.4	4461.2
41	3324.9	3506.9	3686.1	3881.2	4061.9	4256.0	4469.3
42	3352.8	3533.4	3718.9	3909.1	4104.0	4303.8	4508.3
43	3351.5	3532.1	3717.5	3907.6	4102.6	4302.3	4506.8
44	3347.1	3527.5	3712.7	3902.7	4097.5	4297.0	4501.4
45	3339.1	3518.5	3702.7	3891.5	4085.1	4283.4	4486.3
46	3337.9	3517.4	3701.6	3890.5	4084.1	4282.5	4485.6
47	3333.3	3512.6	3696.6	3885.2	4078.6	4276.7	4479.5
48	3335.4	3514.7	3698.8	3887.6	4081.0	4279.2	4482.1
49	3336.2	3515.6	3699.6	3888.5	4082.0	4280.3	4483.3
50	3329.8	3508.9	3692.8	3881.4	4074.6	4272.6	4475.3

TABLE 16(b) (CONTINUED)

CONFIG	Z=41	Z=42	Z=43	Z=44	Z=45	Z=46	Z=47
51	3330.9	3510.1	3694.1	3882.8	4076.2	4274.3	4477.2
52	3333.1	3512.4	3696.5	3885.2	4078.7	4276.9	4479.8
53	3325.4	3504.4	3688.1	3876.6	4069.8	4267.8	4470.4
54	3327.7	3506.8	3690.6	3879.2	4072.5	4270.5	4473.3
55	3331.3	3510.6	3694.6	3883.4	4076.9	4275.1	4478.0
56	3322.2	3501.1	3684.7	3873.1	4066.2	4264.0	4466.6
57	3326.8	3505.5	3688.9	3877.1	4069.8	4267.4	4469.5
58	3327.2	3505.9	3689.4	3877.6	4070.4	4268.0	4470.3
59	3321.3	3499.8	3683.6	3871.0	4063.5	4260.8	4462.9
60	3324.3	3502.9	3686.3	3874.3	4067.0	4264.3	4466.5
61	3326.2	3504.9	3688.4	3876.5	4069.4	4266.9	4469.2
62	3318.3	3497.3	3680.3	3868.2	4060.8	4258.0	4459.9
63	3321.0	3499.5	3682.7	3870.7	4063.3	4260.6	4462.7
64	3324.6	3503.3	3686.7	3874.8	4067.6	4265.1	4467.3
65	3315.5	3493.9	3676.9	3864.6	4057.1	4254.2	4456.1
66	3318.9	3497.4	3680.5	3868.4	4061.0	4258.2	4460.2
67	3323.3	3501.9	3685.3	3873.3	4066.1	4263.5	4465.7
68	3313.5	3491.9	3674.7	3862.4	4054.7	4251.8	4453.6
69	3317.6	3498.9	3681.5	3869.4	4062.0	4258.2	4460.9
70	3321.4	3499.8	3682.9	3870.6	4063.1	4260.3	4462.1
71	3315.1	3494.4	3676.2	3864.3	4056.1	4253.1	4453.7
72	3318.7	3497.1	3679.3	3866.9	4058.8	4256.2	4457.9
73	3320.8	3499.1	3682.2	3869.9	4062.4	4259.5	4461.3
74	3313.3	3491.5	3673.7	3861.4	4053.4	4249.7	4451.7
75	3315.7	3493.8	3676.7	3864.2	4056.4	4253.4	4454.9

TABLE 16(b) (CONTINUED)

CONFIG	Z=41	Z=42	Z=43	Z=44	Z=45	Z=46	Z=47
76	3319.8	3498.2	3681.2	3868.9	4061.3	4258.4	4460.2
77	3310.3	3488.2	3670.9	3858.2	4050.4	4246.9	4448.4
78	3315.4	3495.4	3681.2	3860.1	4056.9	4254.3	4453.6
79	3318.1	3496.2	3679.1	3866.6	4058.8	4255.7	4457.3
80	3318.5	3482.5	3673.2	3857.0	4056.8	4253.6	4451.9

TABLE 16(b) (CONTINUED)

CONFIG	Z=48	Z=49	Z=50	Z=51	Z=52	Z=53	Z=54
1	4736.9	4951.5	5171.0	5395.2	5624.2	5857.9	6096.5
2	4730.9	4945.3	5164.6	5388.6	5617.4	5851.0	6089.4
3	4706.5	4919.4	5137.2	5359.6	5586.7	5818.5	6054.8
4	4701.9	4914.7	5132.2	5354.5	5581.4	5813.1	6049.4
5	4697.3	4909.9	5127.4	5349.5	5576.3	5807.9	6044.2
6	4692.9	4905.4	5122.7	5344.8	5571.5	5803.0	6039.2
7	4688.5	4900.4	5117.1	5338.5	5564.7	5795.4	6030.9
8	4685.5	4897.5	5114.0	5335.1	5561.2	5791.9	6027.4
9	4681.4	4893.3	5109.8	5331.0	5557.0	5787.6	6023.0
10	4678.6	4890.4	5106.8	5328.0	5553.9	5784.4	6019.7
11	4679.7	4888.7	5105.7	5327.1	5553.1	5786.1	6019.5
12	4677.1	4887.7	5103.3	5325.5	5550.1	5780.6	6016.4
13	4673.3	4884.1	5100.5	5321.1	5546.2	5776.7	6011.6
14	4677.5	4887.2	5099.9	5315.7	5546.4	5772.5	6001.9
15	4729.2	4943.7	5162.9	5386.9	5615.7	5849.2	6087.6
16	4723.7	4937.9	5157.0	5380.8	5609.4	5842.8	6081.0
17	4699.4	4912.2	5129.7	5351.9	5578.8	5810.3	6046.6
18	4694.9	4907.5	5124.8	5346.9	5573.6	5805.1	6041.2
19	4690.3	4902.8	5120.0	5341.9	5568.5	5799.9	6036.0
20	4685.5	4898.3	5115.4	5337.2	5563.8	5795.1	6031.1
21	4681.6	4893.4	5109.9	5331.1	5556.9	5787.5	6022.8
22	4678.5	4890.2	5106.7	5327.7	5553.6	5784.1	6019.2
23	4674.6	4886.2	5102.6	5323.6	5549.3	5779.8	6014.9
24	4671.8	4883.4	5099.6	5320.6	5546.3	5776.6	6011.7
25	4672.1	4882.9	5100.3	5319.0	5544.2	5775.8	6010.7

TABLE 16(b) (CONTINUED)

CONFIG	Z=48	Z=49	Z=50	Z=51	Z=52	Z=53	Z=54
26	4669.2	4880.6	5095.6	5317.1	5541.8	5771.3	6006.7
27	4666.3	4877.4	5093.3	5313.9	5538.9	5768.8	6003.2
28	4670.7	4882.8	5091.6	5306.0	5533.3	5755.8	5998.9
29	4724.4	4938.6	5157.7	5381.5	5610.2	5843.6	6081.7
30	4700.8	4913.6	5131.1	5353.4	5580.3	5812.0	6048.2
31	4696.3	4908.9	5126.2	5348.4	5575.1	5806.6	6042.9
32	4691.3	4903.8	5121.0	5343.0	5569.7	5801.0	6037.1
33	4687.2	4899.6	5116.8	5338.6	5565.2	5796.5	6032.6
34	4682.9	4894.7	5111.2	5332.5	5558.4	5789.1	6024.3
35	4679.7	4891.7	5108.2	5329.4	5555.1	5785.7	6020.8
36	4675.8	4887.5	5103.9	5324.9	5550.7	5781.2	6016.4
37	4673.2	4884.8	5101.1	5322.1	5547.8	5778.2	6013.3
38	4675.3	4885.9	5100.0	5322.1	5542.9	5779.1	6014.1
39	4670.8	4883.0	5097.7	5319.2	5543.4	5772.7	6008.7
40	4667.4	4878.7	5094.8	5315.1	5540.8	5770.4	6005.5
41	4667.1	4878.1	5092.6	5312.1	5529.7	5786.5	6011.5
42	4717.6	4931.7	5150.6	5374.2	5602.7	5835.9	6073.8
43	4716.1	4930.1	5149.0	5372.6	5601.0	5834.1	6072.1
44	4710.5	4924.3	5143.0	5366.4	5594.7	5827.7	6065.4
45	4694.2	4906.8	5124.1	5346.1	5572.9	5804.4	6040.4
46	4693.4	4906.0	5123.3	5345.3	5572.0	5803.5	6039.7
47	4687.2	4899.6	5116.7	5338.5	5565.0	5796.2	6032.1
48	4689.7	4902.2	5119.3	5341.2	5567.8	5799.1	6035.1
49	4691.0	4903.5	5120.6	5342.6	5569.2	5800.6	6036.7
50	4682.7	4894.9	5111.9	5333.6	5560.0	5791.1	6026.9

TABLE 16(b) (CONTINUED)

CONFIG	Z=48	Z=49	Z=50	Z=51	Z=52	Z=53	Z=54
51	4684.8	4887.1	5114.1	5335.9	5562.4	5793.6	6029.5
52	4687.5	4889.9	5117.0	5338.8	5565.4	5796.6	6032.6
53	4677.8	4885.9	5106.8	5328.4	5554.6	5785.6	6021.3
54	4681.7	4892.9	5109.9	5331.6	5558.0	5789.1	6024.9
55	4685.7	4888.1	5115.2	5337.1	5563.7	5795.0	6031.0
56	4673.8	4885.8	5102.6	5324.1	5550.3	5781.2	6016.8
57	4676.5	4888.1	5104.4	5325.5	5551.2	5781.6	6016.8
58	4677.3	4889.6	5105.4	5326.5	5552.3	5782.8	6018.0
59	4669.6	4881.1	5097.2	5318.0	5543.6	5773.8	6008.7
60	4673.5	4885.1	5101.3	5322.3	5547.9	5778.3	6013.4
61	4676.2	4887.9	5104.3	5325.4	5551.1	5781.6	6016.8
62	4666.6	4878.0	5094.1	5314.8	5540.3	5770.5	6005.4
63	4669.4	4880.9	5097.1	5317.9	5543.6	5773.8	6008.9
64	4674.2	4885.9	5102.2	5323.2	5549.0	5779.5	6014.6
65	4662.7	4873.9	5089.9	5310.6	5536.0	5766.0	6000.9
66	4666.9	4878.2	5094.3	5315.2	5540.7	5770.9	6005.8
67	4672.6	4884.2	5100.5	5321.4	5547.2	5777.6	6012.7
68	4660.1	4871.3	5087.2	5307.8	5533.1	5763.1	5997.8
69	4668.6	4877.3	5093.5	5315.1	5539.5	5771.0	6005.0
70	4668.7	4879.9	5095.9	5316.5	5541.8	5771.9	6006.6
71	4660.7	4871.7	5086.8	5307.6	5532.6	5762.8	5998.0
72	4664.0	4875.7	5090.6	5312.0	5536.4	5766.5	6001.5
73	4667.9	4879.1	5095.0	5315.6	5540.9	5770.9	6005.6
74	4657.3	4868.8	5084.2	5304.7	5529.5	5758.4	5992.9
75	4661.3	4872.2	5087.9	5308.1	5533.5	5763.0	5997.9

TABLE 16(b) (CONCLUDED)

CONFIG	Z=48	Z=49	Z=50	Z=51	Z=52	Z=53	Z=54
76	4666.7	4877.9	5093.8	5314.4	5539.6	5769.6	6004.3
77	4654.5	4865.3	5080.9	5301.0	5526.0	5755.4	5989.7
78	4664.3	4871.5	5084.1	5307.6	5527.5	5769.4	5994.9
79	4663.6	4874.6	5090.2	5310.5	5535.6	5765.3	5999.7
80	4655.5	4874.4	5077.3	5296.8	5533.5	5758.2	5987.6

TABLE 17(a)–CONFIGURATION LIST FOR 18 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S	2S	2P	3S	3P	3D	4S	4P	4D	4F	5S	5P	5D	5F	6S	6P	6D	7S
GROUND CONFIGURATION																			
1		2	2	6	2	6													
ONE-ELECTRON EXCITED CONFIGURATIONS																			
2	ODD	2	2	6	2	5	1	0	0	0	0	0	0	0	0	0	0	0	0
3	ODD	2	2	6	2	5	0	1	0	0	0	0	0	0	0	0	0	0	0
4		2	2	6	2	5	0	0	1	0	0	0	0	0	0	0	0	0	0
5	ODD	2	2	6	2	5	0	0	0	1	0	0	0	0	0	0	0	0	0
6		2	2	6	2	5	0	0	0	0	1	0	0	0	0	0	0	0	0
7	ODD	2	2	6	2	5	0	0	0	0	0	1	0	0	0	0	0	0	0
8		2	2	6	2	5	0	0	0	0	0	0	1	0	0	0	0	0	0
9	ODD	2	2	6	2	5	0	0	0	0	0	0	0	1	0	0	0	0	0
10		2	2	6	2	5	0	0	0	0	0	0	0	0	1	0	0	0	0
11	ODD	2	2	6	2	5	0	0	0	0	0	0	0	0	0	1	0	0	0
12		2	2	6	2	5	0	0	0	0	0	0	0	0	0	0	1	0	0
13	ODD	2	2	6	2	5	0	0	0	0	0	0	0	0	0	0	0	1	0
14	ODD	2	2	6	2	5	0	0	0	0	0	0	0	0	0	0	0	0	1
15		2	2	6	1	6	1	0	0	0	0	0	0	0	0	0	0	0	0
16		2	2	6	1	6	0	1	0	0	0	0	0	0	0	0	0	0	0
17	ODD	2	2	6	1	6	0	0	1	0	0	0	0	0	0	0	0	0	0
18		2	2	6	1	6	0	0	0	1	0	0	0	0	0	0	0	0	0
19	ODD	2	2	6	1	6	0	0	0	0	1	0	0	0	0	0	0	0	0
20		2	2	6	1	6	0	0	0	0	0	1	0	0	0	0	0	0	0
21	ODD	2	2	6	1	6	0	0	0	0	0	0	1	0	0	0	0	0	0
22		2	2	6	1	6	0	0	0	0	0	0	0	1	0	0	0	0	0
23	ODD	2	2	6	1	6	0	0	0	0	0	0	0	0	1	0	0	0	0
24		2	2	6	1	6	0	0	0	0	0	0	0	0	0	1	0	0	0
25	ODD	2	2	6	1	6	0	0	0	0	0	0	0	0	0	0	1	0	0
26		2	2	6	1	6	0	0	0	0	0	0	0	0	0	0	0	1	0
27		2	2	6	1	6	0	0	0	0	0	0	0	0	0	0	0	0	1
TWO-ELECTRON EXCITED CONFIGURATIONS																			
28		2	2	6	2	4	2	0	0	0	0	0	0	0	0	0	0	0	0
29		2	2	6	2	4	1	1	0	0	0	0	0	0	0	0	0	0	0
30	ODD	2	2	6	2	4	1	0	1	0	0	0	0	0	0	0	0	0	0
31		2	2	6	2	4	1	0	0	1	0	0	0	0	0	0	0	0	0
32	ODD	2	2	6	2	4	1	0	0	0	1	0	0	0	0	0	0	0	0
33		2	2	6	2	4	1	0	0	0	0	1	0	0	0	0	0	0	0
34	ODD	2	2	6	2	4	1	0	0	0	0	0	1	0	0	0	0	0	0
35		2	2	6	2	4	1	0	0	0	0	0	0	1	0	0	0	0	0
36	ODD	2	2	6	2	4	1	0	0	0	0	0	0	0	1	0	0	0	0
37		2	2	6	2	4	1	0	0	0	0	0	0	0	0	1	0	0	0
38	ODD	2	2	6	2	4	1	0	0	0	0	0	0	0	0	0	1	0	0
39		2	2	6	2	4	1	0	0	0	0	0	0	0	0	0	0	1	0
40		2	2	6	2	4	1	0	0	0	0	0	0	0	0	0	0	0	1
41	ODD	2	2	6	1	5	2	0	0	0	0	0	0	0	0	0	0	0	0
42		2	2	6	0	6	2	0	0	0	0	0	0	0	0	0	0	0	0
43	ODD	2	2	6	1	5	1	1	0	0	0	0	0	0	0	0	0	0	0
44		2	2	6	0	6	1	1	0	0	0	0	0	0	0	0	0	0	0
45		2	2	6	1	5	1	0	1	0	0	0	0	0	0	0	0	0	0
46	ODD	2	2	6	0	6	1	0	1	0	0	0	0	0	0	0	0	0	0
47	ODD	2	2	6	1	5	1	0	0	1	0	0	0	0	0	0	0	0	0

TABLE 17(a) (CONCLUDED)

48		2	2	6	0	6	1	0	0	1	0	0	0	0	0	0	0	0	0
49		2	2	6	1	5	1	0	0	0	1	0	0	0	0	0	0	0	0
50	DDD	2	2	6	0	6	1	0	0	0	1	0	0	0	0	0	0	0	0
51	DDD	2	2	6	1	5	1	0	0	0	0	1	0	0	0	0	0	0	0
52		2	2	6	0	6	1	0	0	0	0	1	0	0	0	0	0	0	0
53		2	2	6	1	5	1	0	0	0	0	0	1	0	0	0	0	0	0
54	DDD	2	2	6	0	6	1	0	0	0	0	0	1	0	0	0	0	0	0
55	DDD	2	2	6	1	5	1	0	0	0	0	0	0	1	0	0	0	0	0
56		2	2	6	0	6	1	0	0	0	0	0	0	1	0	0	0	0	0
57		2	2	6	1	5	1	0	0	0	0	0	0	0	1	0	0	0	0
58	DDD	2	2	6	0	6	1	0	0	0	0	0	0	0	1	0	0	0	0
59	DDD	2	2	6	1	5	1	0	0	0	0	0	0	0	0	1	0	0	0
60		2	2	6	0	6	1	0	0	0	0	0	0	0	0	1	0	0	0
61		2	2	6	1	5	1	0	0	0	0	0	0	0	0	0	1	0	0
62	DDD	2	2	6	0	6	1	0	0	0	0	0	0	0	0	0	1	0	0
63	DDD	2	2	6	1	5	1	0	0	0	0	0	0	0	0	0	0	1	0
64		2	2	6	0	6	1	0	0	0	0	0	0	0	0	0	0	1	0
65	DDD	2	2	6	1	5	1	0	0	0	0	0	0	0	0	0	0	0	1
66		2	2	6	0	6	1	0	0	0	0	0	0	0	0	0	0	0	1
67	DDD	2	2	6	2	3	3	0	0	0	0	0	0	0	0	0	0	0	0
68		2	2	6	1	4	3	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 17(b)–18 ELECTRONS

CONFIG	Z=36	Z=37	Z=38	Z=39	Z=40	Z=41	Z=42
1	2563.9	2724.0	2889.0	3058.8	3233.6	3413.2	3597.8
2	2559.2	2719.0	2883.7	3053.2	3227.6	3407.0	3591.2
3	2550.8	2709.6	2873.2	3041.6	3215.0	3393.2	3576.3
4	2547.6	2706.3	2869.9	3038.2	3211.4	3389.5	3572.4
5	2543.9	2702.5	2865.9	3034.1	3207.3	3385.2	3568.0
6	2540.9	2699.3	2862.6	3030.7	3203.7	3381.5	3564.2
7	2542.2	2700.3	2863.4	3031.1	3203.8	3381.2	3563.5
8	2539.8	2698.0	2860.9	3028.6	3201.1	3378.6	3560.8
9	2537.2	2695.2	2858.0	3025.6	3198.1	3375.3	3557.5
10	2535.3	2693.2	2855.9	3023.5	3195.8	3373.1	3555.1
11	2536.7	2695.9	2857.6	3025.3	3198.2	3373.5	3556.9
12	2536.1	2693.3	2856.2	3023.0	3195.0	3372.4	3554.8
13	2533.6	2691.3	2854.1	3021.0	3193.1	3370.3	3551.8
14	2535.2	2693.5	2860.4	3017.9	3190.7	3363.4	3548.9
15	2554.3	2713.9	2878.3	3047.7	3221.9	3401.0	3585.1
16	2546.0	2704.5	2867.9	3036.2	3209.3	3387.3	3570.2
17	2542.8	2701.3	2864.6	3032.8	3205.8	3383.6	3566.3
18	2539.1	2697.5	2860.7	3028.7	3201.7	3379.4	3562.0
19	2536.1	2694.4	2857.4	3025.4	3198.1	3375.7	3558.2
20	2537.4	2695.4	2858.2	3025.8	3198.2	3375.5	3557.6
21	2535.2	2692.9	2855.7	3023.2	3195.5	3372.8	3554.7
22	2532.4	2690.3	2852.9	3020.3	3192.6	3369.6	3551.6
23	2530.6	2688.3	2850.8	3018.2	3190.4	3367.4	3549.2
24	2533.2	2690.4	2852.5	3019.8	3193.4	3369.2	3551.2
25	2531.0	2688.8	2850.9	3018.2	3190.3	3366.5	3548.5

TABLE 17(b) (CONTINUED)

CONFIG	Z=36	Z=37	Z=38	Z=39	Z=40	Z=41	Z=42
26	2528.9	2686.5	2848.8	3015.7	3187.8	3364.6	3546.0
27	2538.2	2692.3	2854.9	3011.1	3189.1	3370.1	3548.6
28	2555.0	2714.6	2879.1	3048.4	3222.7	3401.8	3585.9
29	2547.2	2705.8	2869.2	3037.5	3210.6	3388.6	3571.6
30	2544.0	2702.5	2865.9	3034.1	3207.1	3385.0	3567.8
31	2539.8	2698.3	2861.5	3029.6	3202.6	3380.4	3563.0
32	2537.3	2695.6	2858.7	3026.6	3199.4	3377.1	3559.6
33	2538.6	2696.6	2859.4	3027.0	3199.5	3376.8	3558.9
34	2536.3	2694.3	2856.9	3024.8	3196.8	3374.3	3556.3
35	2533.5	2691.3	2854.0	3021.4	3193.7	3370.8	3552.8
36	2531.8	2689.6	2852.1	3019.5	3191.7	3368.8	3550.6
37	2534.1	2692.2	2853.7	3021.4	3194.3	3371.2	3553.7
38	2532.0	2689.5	2851.9	3019.4	3191.8	3368.9	3549.5
39	2529.8	2687.5	2849.9	3017.1	3189.0	3365.7	3547.4
40	2527.9	2690.3	2851.5	3011.3	3181.6	3369.6	3543.9
41	2550.4	2709.8	2874.1	3043.3	3217.3	3396.3	3580.1
42	2545.6	2704.8	2868.9	3037.8	3211.7	3390.4	3574.0
43	2542.6	2701.1	2864.2	3032.4	3205.3	3383.2	3565.9
44	2537.9	2696.1	2859.1	3027.0	3199.8	3377.4	3559.8
45	2539.5	2697.8	2861.0	3029.0	3201.9	3379.6	3562.1
46	2534.7	2692.8	2855.8	3023.6	3196.3	3373.8	3556.1
47	2535.4	2693.6	2856.7	3024.6	3197.3	3374.9	3557.4
48	2530.6	2688.7	2851.5	3019.2	3191.8	3369.2	3551.4
49	2532.9	2691.0	2853.9	3021.6	3194.2	3371.7	3554.0
50	2528.2	2686.0	2848.7	3016.3	3188.7	3365.9	3548.0

TABLE 17(b) (CONTINUED)

CONFIG	Z=36	Z=37	Z=38	Z=39	Z=40	Z=41	Z=42
51	2534.2	2692.0	2854.6	3022.1	3194.3	3371.4	3553.3
52	2529.4	2687.1	2849.5	3016.7	3188.8	3365.7	3547.4
53	2531.9	2689.7	2852.2	3019.6	3191.7	3368.9	3550.7
54	2527.2	2684.8	2847.1	3014.3	3186.3	3363.2	3544.8
55	2529.1	2686.7	2849.2	3016.5	3188.6	3365.5	3547.3
56	2524.4	2681.9	2844.1	3011.2	3183.1	3359.8	3541.4
57	2527.5	2685.0	2847.4	3014.6	3186.6	3363.4	3545.1
58	2522.8	2680.2	2842.3	3009.3	3181.2	3357.8	3539.3
59	2529.4	2687.8	2850.3	3015.9	3189.2	3366.1	3547.5
60	2524.4	2682.7	2844.7	3012.3	3183.5	3359.5	3541.0
61	2527.8	2685.2	2847.6	3014.6	3186.4	3362.8	3544.3
62	2523.6	2680.7	2842.2	3009.5	3181.1	3357.2	3539.0
63	2525.7	2683.1	2845.1	3012.1	3183.9	3360.5	3541.8
64	2521.1	2678.3	2840.2	3007.0	3178.5	3354.8	3536.1
65	2514.4	2690.7	2852.4	3010.4	3181.7	3374.0	3554.8
66	2522.5	2685.9	2835.8	2997.6	3180.8	3367.4	3547.6
67	2550.5	2709.9	2874.2	3043.4	3217.4	3396.4	3580.2
68	2546.3	2705.5	2869.6	3038.6	3212.4	3391.2	3574.8

TABLE 17(b) (CONTINUED)

CONFIG	Z=43	Z=44	Z=45	Z=46	Z=47	Z=48	Z=49
1	3785.5	3979.7	4178.8	4382.7	4591.5	4805.2	5023.9
2	3780.4	3974.4	4173.3	4377.0	4585.7	4799.2	5017.7
3	3764.2	3956.9	4154.4	4356.6	4563.7	4775.7	4992.8
4	3760.2	3952.8	4150.1	4352.3	4559.4	4771.2	4988.0
5	3755.7	3948.2	4145.5	4347.7	4554.7	4766.5	4983.2
6	3751.7	3944.1	4141.3	4343.3	4550.2	4761.9	4978.5
7	3750.6	3942.6	4139.3	4340.9	4547.1	4758.3	4974.3
8	3747.9	3939.6	4136.3	4337.8	4544.0	4755.1	4971.3
9	3744.4	3936.2	4132.7	4334.1	4540.3	4751.3	4967.1
10	3742.0	3933.6	4130.1	4331.4	4537.5	4748.4	4964.1
11	3742.7	3937.4	4131.9	4332.6	4536.9	4748.1	4964.2
12	3741.5	3932.8	4129.2	4328.3	4536.0	4746.1	4962.4
13	3738.2	3929.9	4125.9	4326.9	4532.5	4743.2	4958.5
14	3731.1	3931.6	4128.2	4329.5	4539.4	4737.8	4958.7
15	3774.0	3967.8	4166.5	4370.0	4578.5	4791.8	5010.1
16	3757.9	3950.4	4147.7	4349.7	4556.7	4768.4	4985.2
17	3753.9	3946.3	4143.5	4345.4	4552.3	4763.9	4980.5
18	3749.5	3941.7	4138.9	4340.8	4547.6	4759.2	4975.7
19	3745.5	3937.7	4134.7	4336.5	4543.2	4754.7	4971.0
20	3744.5	3936.2	4132.7	4334.0	4540.1	4751.2	4967.0
21	3741.7	3933.3	4129.8	4331.0	4537.1	4747.9	4963.8
22	3738.3	3929.8	4126.2	4327.4	4533.3	4744.1	4959.7
23	3735.9	3927.3	4123.6	4324.7	4530.6	4741.3	4956.8
24	3738.1	3930.0	4126.5	4325.8	4530.9	4741.6	4957.0
25	3735.3	3926.5	4122.2	4323.1	4529.4	4738.7	4954.3

TABLE 17(b) (CONTINUED)

CONFIG	Z=43	Z=44	Z=45	Z=46	Z=47	Z=48	Z=49
26	3732.5	3923.5	4119.3	4320.2	4525.9	4736.4	4951.2
27	3727.2	3918.4	4129.4	4321.4	4521.2	4742.9	4944.5
28	3774.8	3968.7	4167.4	4371.0	4579.4	4792.8	5011.6
29	3759.4	3951.9	4149.2	4351.3	4558.3	4770.1	4986.9
30	3755.4	3947.8	4145.0	4347.0	4553.9	4765.6	4982.1
31	3750.5	3942.8	4140.0	4341.9	4548.7	4760.4	4976.9
32	3746.9	3939.1	4136.2	4338.0	4544.7	4756.2	4972.6
33	3745.9	3937.6	4134.2	4335.6	4541.7	4752.8	4968.6
34	3743.3	3934.8	4131.3	4332.6	4538.6	4749.6	4965.5
35	3739.6	3931.1	4127.6	4328.8	4534.7	4745.6	4961.2
36	3737.3	3928.8	4125.1	4326.2	4532.2	4742.9	4958.5
37	3738.7	3931.3	4127.0	4328.7	4531.5	4743.2	4958.9
38	3737.0	3928.8	4124.0	4325.6	4531.0	4740.8	4955.7
39	3734.0	3924.9	4121.0	4321.6	4527.3	4737.8	4952.9
40	3722.8	3934.6	4121.5	4320.5	4522.5	4730.6	4936.2
41	3768.9	3962.5	4161.0	4364.4	4572.6	4785.8	5003.9
42	3762.5	3955.9	4154.2	4357.4	4565.5	4778.4	4996.3
43	3753.5	3945.8	4142.8	4344.8	4551.6	4763.2	4979.8
44	3747.2	3939.3	4136.2	4337.9	4544.5	4756.0	4972.4
45	3749.5	3941.7	4138.7	4340.5	4547.2	4758.7	4975.1
46	3743.2	3935.2	4132.1	4333.7	4540.2	4751.4	4967.6
47	3744.6	3936.8	4133.7	4335.5	4542.1	4753.6	4969.9
48	3738.5	3930.4	4127.1	4328.7	4535.1	4746.4	4962.5
49	3741.1	3933.1	4130.0	4331.6	4538.1	4749.5	4965.7
50	3735.0	3926.8	4123.4	4324.8	4531.1	4742.3	4958.3

TABLE 17(b) (CONTINUED)

CONFIG	Z=43	Z=44	Z=45	Z=46	Z=47	Z=48	Z=49
51	3740.1	3931.7	4128.0	4329.2	4535.2	4746.0	4961.6
52	3733.9	3925.3	4121.5	4322.4	4528.2	4738.8	4954.3
53	3737.5	3928.9	4125.2	4326.3	4532.2	4742.8	4958.6
54	3731.3	3922.5	4118.6	4319.6	4525.3	4735.7	4951.1
55	3733.8	3925.2	4121.4	4322.5	4528.2	4738.9	4954.3
56	3727.7	3918.9	4114.9	4315.7	4521.3	4731.8	4947.1
57	3731.6	3922.9	4119.0	4319.9	4525.7	4736.2	4951.6
58	3725.5	3916.6	4112.5	4313.3	4518.8	4729.2	4944.3
59	3733.5	3925.7	4119.8	4320.9	4526.7	4736.1	4952.2
60	3726.2	3918.6	4114.1	4315.0	4520.5	4729.8	4945.5
61	3731.3	3921.9	4117.3	4317.9	4524.2	4733.9	4949.6
62	3725.1	3915.0	4111.0	4311.6	4517.8	4726.5	4942.0
63	3728.2	3919.1	4114.9	4315.3	4520.9	4731.2	4945.7
64	3722.0	3912.9	4108.4	4308.8	4514.0	4724.3	4938.7
65	3729.8	3925.5	4115.2	4316.1	4520.9	4716.3	4945.2
66	3723.8	3920.6	4120.4	4298.6	4513.6	4723.0	4937.5
67	3768.9	3962.6	4161.1	4364.4	4572.7	4785.9	5003.9
68	3763.4	3956.8	4155.1	4358.3	4566.4	4779.3	4997.2

TABLE 17(b) (CONTINUED)

CONFIG	Z=50	Z=51	Z=52	Z=53	Z=54	Z=55	Z=56
1	5247.4	5475.8	5709.1	5947.3	6190.4	6438.4	6691.2
2	5241.0	5469.3	5702.4	5940.4	6183.3	6431.1	6683.8
3	5214.6	5441.3	5672.8	5909.0	6150.0	6395.8	6646.5
4	5209.6	5436.1	5667.4	5903.5	6144.5	6390.2	6640.8
5	5204.7	5431.0	5662.2	5898.2	6139.0	6384.7	6635.2
6	5199.9	5426.1	5657.2	5893.1	6133.9	6379.5	6630.0
7	5195.1	5420.7	5651.2	5886.5	6126.5	6371.4	6621.1
8	5191.9	5417.6	5647.9	5882.9	6123.0	6367.8	6617.3
9	5187.8	5413.2	5643.5	5878.6	6118.6	6363.3	6612.8
10	5184.7	5410.1	5640.3	5875.3	6115.2	6359.9	6609.3
11	5185.7	5412.4	5637.7	5876.1	6114.9	6359.1	6605.1
12	5182.8	5405.7	5636.5	5871.0	6111.9	6356.0	6604.2
13	5178.8	5403.7	5633.6	5868.7	6107.5	6351.8	6600.9
14	5175.7	5409.6	5652.4	5868.3	6094.2	6350.5	6601.0
15	5233.2	5461.2	5694.1	5931.9	6174.6	6422.2	6674.7
16	5206.8	5433.3	5664.5	5900.6	6141.4	6387.0	6637.5
17	5201.9	5428.1	5659.3	5895.2	6135.9	6381.4	6631.9
18	5197.0	5423.1	5654.1	5889.9	6130.5	6376.0	6626.3
19	5192.2	5418.3	5649.2	5884.9	6125.4	6370.9	6621.1
20	5187.6	5413.0	5643.2	5878.3	6118.1	6362.8	6612.3
21	5184.4	5409.7	5639.8	5874.7	6114.6	6359.2	6608.6
22	5180.2	5405.5	5635.6	5870.4	6110.2	6354.7	6604.0
23	5177.2	5402.4	5632.4	5867.2	6106.8	6351.3	6600.6
24	5176.8	5404.5	5632.7	5866.8	6106.7	6351.2	6598.1
25	5175.4	5398.7	5629.2	5863.5	6104.7	6347.4	6595.6

TABLE 17(b) (CONTINUED)

CONFIG	Z=50	Z=51	Z=52	Z=53	Z=54	Z=55	Z=56
26	5171.4	5396.2	5625.6	5860.2	6099.2	6343.4	6592.1
27	5170.0	5395.3	5623.7	5857.9	6095.7	6326.0	6593.0
28	5234.2	5462.2	5695.2	5933.0	6175.7	6423.3	6675.8
29	5208.5	5435.1	5666.3	5902.5	6143.2	6388.9	6639.5
30	5203.6	5429.9	5661.1	5897.0	6137.8	6383.4	6633.8
31	5198.3	5424.4	5655.4	5891.3	6131.9	6377.4	6627.7
32	5193.8	5419.9	5650.8	5886.6	6127.2	6372.6	6622.9
33	5189.2	5414.7	5644.9	5880.0	6119.9	6364.6	6614.2
34	5186.2	5411.5	5641.7	5876.6	6116.5	6361.1	6610.6
35	5181.7	5407.0	5637.2	5872.1	6111.9	6356.5	6605.8
36	5178.9	5404.1	5634.2	5869.0	6108.7	6353.2	6602.5
37	5177.4	5405.3	5632.5	5868.9	6108.0	6355.5	6598.2
38	5177.1	5400.9	5631.2	5864.2	6105.4	6349.1	6597.5
39	5173.1	5397.5	5627.3	5861.8	6101.0	6345.7	6594.0
40	5166.4	5395.6	5623.5	5862.4	6097.3	6338.7	6592.0
41	5226.8	5454.6	5687.4	5925.0	6167.5	6414.9	6667.2
42	5219.6	5446.6	5679.1	5916.5	6158.8	6406.0	6658.1
43	5201.3	5427.6	5658.6	5894.5	6135.1	6380.6	6630.9
44	5193.6	5419.6	5650.4	5886.1	6126.5	6371.8	6622.0
45	5196.3	5422.4	5653.4	5889.1	6129.7	6375.1	6625.3
46	5188.7	5414.5	5645.3	5880.8	6121.2	6366.3	6616.4
47	5191.1	5417.1	5647.8	5883.5	6123.9	6369.2	6619.4
48	5183.4	5409.2	5639.8	5875.2	6115.4	6360.5	6610.4
49	5186.7	5412.6	5643.3	5878.8	6119.2	6364.5	6614.6
50	5179.1	5404.8	5635.3	5870.6	6110.8	6355.8	6605.7

TABLE 17(b) (CONCLUDED)

CONFIG	Z=50	Z=51	Z=52	Z=53	Z=54	Z=55	Z=56
51	5182.1	5407.4	5637.4	5872.3	6112.0	6356.5	6605.8
52	5174.5	5399.6	5629.4	5864.1	6103.6	6347.9	6597.0
53	5179.0	5404.2	5634.2	5869.0	6108.7	6353.0	6602.3
54	5171.4	5396.5	5626.2	5860.8	6100.2	6344.6	6593.4
55	5174.6	5399.7	5629.7	5864.4	6104.0	6348.4	6597.5
56	5167.1	5392.1	5621.7	5856.3	6095.6	6339.8	6588.8
57	5171.8	5396.9	5626.7	5861.4	6100.9	6345.2	6594.3
58	5164.3	5389.2	5618.8	5853.2	6092.5	6336.6	6585.5
59	5170.7	5397.9	5626.2	5859.8	6100.7	6346.1	6592.6
60	5164.2	5389.1	5618.8	5849.8	6092.8	6338.2	6584.8
61	5169.5	5393.9	5623.8	5857.3	6097.4	6340.9	6589.6
62	5162.1	5385.3	5615.5	5849.5	6089.5	6331.9	6581.1
63	5166.0	5390.6	5619.9	5854.1	6093.1	6337.4	6585.5
64	5158.6	5382.8	5611.9	5846.1	6085.0	6328.7	6576.7
65	5154.4	5384.9	5623.3	5852.1	6088.8	6332.2	6593.2
66	5155.0	5368.9	5618.9	5849.7	6078.5	6313.1	6580.1
67	5226.9	5454.7	5687.4	5925.0	6167.5	6414.9	6667.2
68	5219.9	5447.6	5680.1	5917.5	6159.8	6407.0	6659.1

TABLE 18(a)–CONFIGURATION LIST FOR 19 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S 2S 2P 3S 3P 3D 4S 4P 4D 4F 5S 5P 5D 5F 5S 6P 6D 7S
GROUND CONFIGURATION		
1		2 2 6 2 6 1
ONE-ELECTRON EXCITED CONFIGURATIONS		
2		2 2 6 2 6 0 1 0 0 0 0 0 0 0 0 0 0 0
3	ODD	2 2 6 2 6 0 0 1 0 0 0 0 0 0 0 0 0 0
4		2 2 6 2 6 0 0 0 1 0 0 0 0 0 0 0 0 0
5	ODD	2 2 6 2 6 0 0 0 0 1 0 0 0 0 0 0 0 0
6		2 2 6 2 6 0 0 0 0 0 1 0 0 0 0 0 0 0
7	ODD	2 2 6 2 6 0 0 0 0 0 0 1 0 0 0 0 0 0
8		2 2 6 2 6 0 0 0 0 0 0 0 1 0 0 0 0 0
9	ODD	2 2 6 2 6 0 0 0 0 0 0 0 0 1 0 0 0 0
10		2 2 6 2 6 0 0 0 0 0 0 0 0 0 1 0 0 0
11	ODD	2 2 6 2 6 0 0 0 0 0 0 0 0 0 0 1 0 0
12		2 2 6 2 6 0 0 0 0 0 0 0 0 0 0 0 1 0
13		2 2 6 2 6 0 0 0 0 0 0 0 0 0 0 0 0 1
14	ODD	2 2 6 2 5 2 0 0 0 0 0 0 0 0 0 0 0 0
15	ODD	2 2 6 2 5 1 1 0 0 0 0 0 0 0 0 0 0 0
16		2 2 6 2 5 1 0 1 0 0 0 0 0 0 0 0 0 0
17	ODD	2 2 6 2 5 1 0 0 1 0 0 0 0 0 0 0 0 0
18		2 2 6 2 5 1 0 0 0 1 0 0 0 0 0 0 0 0
19	ODD	2 2 6 2 5 1 0 0 0 0 1 0 0 0 0 0 0 0
20		2 2 6 2 5 1 0 0 0 0 0 1 0 0 0 0 0 0
21	ODD	2 2 6 2 5 1 0 0 0 0 0 0 1 0 0 0 0 0
22		2 2 6 2 5 1 0 0 0 0 0 0 0 1 0 0 0 0
23	ODD	2 2 6 2 5 1 0 0 0 0 0 0 0 0 1 0 0 0
24		2 2 6 2 5 1 0 0 0 0 0 0 0 0 0 1 0 0
25	ODD	2 2 6 2 5 1 0 0 0 0 0 0 0 0 0 0 1 0
26	ODD	2 2 6 2 5 1 0 0 0 0 0 0 0 0 0 0 0 1
27		2 2 6 1 6 2 0 0 0 0 0 0 0 0 0 0 0 0
28		2 2 6 1 6 1 1 0 0 0 0 0 0 0 0 0 0 0
29	ODD	2 2 6 1 6 1 0 1 0 0 0 0 0 0 0 0 0 0
30		2 2 6 1 6 1 0 0 1 0 0 0 0 0 0 0 0 0
31	ODD	2 2 6 1 6 1 0 0 0 1 0 0 0 0 0 0 0 0
32		2 2 6 1 6 1 0 0 0 0 1 0 0 0 0 0 0 0
33	ODD	2 2 6 1 6 1 0 0 0 0 0 1 0 0 0 0 0 0
34		2 2 6 1 6 1 0 0 0 0 0 0 1 0 0 0 0 0
35	ODD	2 2 6 1 6 1 0 0 0 0 0 0 0 1 0 0 0 0
36		2 2 6 1 6 1 0 0 0 0 0 0 0 0 1 0 0 0
37	ODD	2 2 6 1 6 1 0 0 0 0 0 0 0 0 0 1 0 0
38		2 2 6 1 6 1 0 0 0 0 0 0 0 0 0 0 1 0
39		2 2 6 1 6 1 0 0 0 0 0 0 0 0 0 0 0 1
TWO-ELECTRON EXCITED CONFIGURATIONS		
40		2 2 6 2 4 3 0 0 0 0 0 0 0 0 0 0 0 0
41	ODD	2 2 6 2 5 0 2 0 0 0 0 0 0 0 0 0 0 0
42		2 2 6 2 4 2 1 0 0 0 0 0 0 0 0 0 0 0
43		2 2 6 2 4 1 2 0 0 0 0 0 0 0 0 0 0 0
44		2 2 6 2 4 0 1 1 0 0 0 0 0 0 0 0 0 0
45	ODD	2 2 6 2 4 2 0 1 0 0 0 0 0 0 0 0 0 0
46	ODD	2 2 6 2 4 1 1 1 0 0 0 0 0 0 0 0 0 0
47	ODD	2 2 6 2 5 0 1 0 1 0 0 0 0 0 0 0 0 0

TABLE 18(a) (CONTINUED)

48		2	2	5	2	4	2	0	0	1	0	0	0	0	0	0	0	0	0
49		2	2	5	2	4	1	1	0	1	0	0	0	0	0	0	0	0	0
50		2	2	5	2	5	0	1	0	0	1	0	0	0	0	0	0	0	0
51	000	2	2	5	2	4	2	0	0	0	1	0	0	0	0	0	0	0	0
52	000	2	2	5	2	4	1	1	0	0	1	0	0	0	0	0	0	0	0
53	000	2	2	5	2	5	0	1	0	0	0	1	0	0	0	0	0	0	0
54		2	2	5	2	4	2	0	0	0	0	1	0	0	0	0	0	0	0
55		2	2	5	2	4	1	1	0	0	0	1	0	0	0	0	0	0	0
56		2	2	5	2	5	0	1	0	0	0	0	1	0	0	0	0	0	0
57	000	2	2	5	2	4	2	0	0	0	0	0	1	0	0	0	0	0	0
58	000	2	2	5	2	4	1	1	0	0	0	0	1	0	0	0	0	0	0
59	000	2	2	5	2	5	0	1	0	0	0	0	0	1	0	0	0	0	0
60		2	2	5	2	4	2	0	0	0	0	0	0	1	0	0	0	0	0
61		2	2	5	2	4	1	1	0	0	0	0	0	1	0	0	0	0	0
62		2	2	5	2	5	0	1	0	0	0	0	0	0	1	0	0	0	0
63	000	2	2	5	2	4	2	0	0	0	0	0	0	0	1	0	0	0	0
64	000	2	2	5	2	4	1	1	0	0	0	0	0	0	1	0	0	0	0
65	000	2	2	5	2	5	0	1	0	0	0	0	0	0	0	1	0	0	0
66		2	2	5	2	4	2	0	0	0	0	0	0	0	0	1	0	0	0
67		2	2	5	2	4	1	1	0	0	0	0	0	0	0	1	0	0	0
68		2	2	5	2	5	0	1	0	0	0	0	0	0	0	0	1	0	0
69	000	2	2	5	2	4	2	0	0	0	0	0	0	0	0	0	1	0	0
70	000	2	2	5	2	4	1	1	0	0	0	0	0	0	0	0	1	0	0
71	000	2	2	5	2	5	0	1	0	0	0	0	0	0	0	0	0	1	0
72		2	2	5	2	4	2	0	0	0	0	0	0	0	0	0	0	1	0
73		2	2	5	2	4	1	1	0	0	0	0	0	0	0	0	0	1	0
74	000	2	2	5	2	5	0	1	0	0	0	0	0	0	0	0	0	0	1
75		2	2	5	2	4	2	0	0	0	0	0	0	0	0	0	0	0	1
76		2	2	5	2	4	1	1	0	0	0	0	0	0	0	0	0	0	1
77	000	2	2	5	1	5	3	0	0	0	0	0	0	0	0	0	0	0	0
78		2	2	5	0	6	3	0	0	0	0	0	0	0	0	0	0	0	0
79		2	2	5	1	6	0	2	0	0	0	0	0	0	0	0	0	0	0
80	000	2	2	5	1	5	2	1	0	0	0	0	0	0	0	0	0	0	0
81	000	2	2	5	1	5	1	2	0	0	0	0	0	0	0	0	0	0	0
82		2	2	5	0	6	2	1	0	0	0	0	0	0	0	0	0	0	0
83		2	2	5	0	5	3	2	0	0	0	0	0	0	0	0	0	0	0
84	000	2	2	5	1	5	0	1	1	0	0	0	0	0	0	0	0	0	0
85		2	2	5	1	5	2	0	1	0	0	0	0	0	0	0	0	0	0
86		2	2	5	1	5	1	1	1	0	0	0	0	0	0	0	0	0	0
87	000	2	2	5	0	5	2	0	1	0	0	0	0	0	0	0	0	0	0
88	000	2	2	5	0	5	1	1	1	0	0	0	0	0	0	0	0	0	0
89		2	2	5	1	6	0	1	0	1	0	0	0	0	0	0	0	0	0
90	000	2	2	5	1	5	2	0	0	1	0	0	0	0	0	0	0	0	0
91	000	2	2	5	1	5	1	1	0	1	0	0	0	0	0	0	0	0	0
92		2	2	5	0	5	2	0	0	1	0	0	0	0	0	0	0	0	0
93		2	2	5	0	6	1	1	0	1	0	0	0	0	0	0	0	0	0
94	000	2	2	5	1	6	0	1	0	0	1	0	0	0	0	0	0	0	0
95		2	2	5	1	5	2	0	0	0	1	0	0	0	0	0	0	0	0
96		2	2	5	1	5	1	1	0	0	1	0	0	0	0	0	0	0	0
97	000	2	2	5	0	5	2	0	0	0	1	0	0	0	0	0	0	0	0
98	000	2	2	5	0	5	1	1	0	0	1	0	0	0	0	0	0	0	0
99		2	2	5	1	6	0	1	0	0	0	1	0	0	0	0	0	0	0
100	000	2	2	5	1	5	2	0	0	0	0	1	0	0	0	0	0	0	0
101	000	2	2	5	1	5	1	1	0	0	0	1	0	0	0	0	0	0	0
102		2	2	5	0	5	2	0	0	0	0	1	0	0	0	0	0	0	0
103		2	2	5	0	6	1	1	0	0	0	1	0	0	0	0	0	0	0
104	000	2	2	5	1	5	0	1	0	0	0	0	1	0	0	0	0	0	0
105		2	2	5	1	5	2	0	0	0	0	0	1	0	0	0	0	0	0
106		2	2	5	1	5	1	1	0	0	0	0	1	0	0	0	0	0	0
107	000	2	2	5	0	6	2	0	0	0	0	0	1	0	0	0	0	0	0

TABLE 18(a) (CONCLUDED)

108		2	2	6	1	6	0	1	0	0	0	0	0	1	0	0	0	0	0
111	000	2	2	6	1	5	1	1	0	0	0	0	0	1	0	0	0	0	0
113		2	2	6	0	5	1	1	0	0	0	0	0	1	0	0	0	0	0
115		2	2	6	1	5	2	0	0	0	0	0	0	0	1	0	0	0	0
117	000	2	2	6	0	6	2	0	0	0	0	0	0	0	1	0	0	0	0
119		2	2	6	1	6	0	1	0	0	0	0	0	0	0	1	0	0	0
121	000	2	2	6	1	5	1	1	0	0	0	0	0	0	0	1	0	0	0
123		2	2	6	0	6	1	1	0	0	0	0	0	0	0	1	0	0	0
125		2	2	6	1	5	2	0	0	0	0	0	0	0	0	0	1	0	0
127	000	2	2	6	0	6	2	0	0	0	0	0	0	0	0	0	1	0	0
129		2	2	6	1	6	0	1	0	0	0	0	0	0	0	0	0	1	0
131	000	2	2	6	1	5	1	1	0	0	0	0	0	0	0	0	0	1	0
133		2	2	6	0	6	1	1	0	0	0	0	0	0	0	0	0	1	0
135	000	2	2	6	1	5	2	0	0	0	0	0	0	0	0	0	0	0	1
137		2	2	6	0	6	2	0	0	0	0	0	0	0	0	0	0	0	1

TABLE 18(b)–19 ELECTRONS

CONFIG	Z=38	Z=39	Z=40	Z=41	Z=42	Z=43	Z=44
1	2716.5	3[illegible]	3256.2	3449.9	3635.9	3828.3	4025.7
2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	2707.5	3078.9	3256.3	3436.7	3622.9	3814.1	4010.2
4	[illegible]	3078.3	[illegible]	3433.8	3619.9	3811.1	4007.1
5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	2701.4	3072.7	3249.1	3428.9	3614.6	3805.2	[illegible]
7	[illegible]	[illegible]	3247.1	3427.6	3613.4	[illegible]	3999.5
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	[illegible]	[illegible]	[illegible]	3424.7	[illegible]	[illegible]	3996.1
10	[illegible]	[illegible]	[illegible]	3423.4	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	3241.4	3421.8	[illegible]	3797.2	3992.3
13	[illegible]	[illegible]	[illegible]	3420.3	[illegible]	3795.4	[illegible]
14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	3249.9	3430.9	3617.1	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3999.9
17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3795.4	[illegible]
19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	[illegible]	3233.4	3413.5	[illegible]	3785.7	3983.7
22	[illegible]	[illegible]	3231.3	3411.4	3596.5	3786.4	3981.3
23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	[illegible]	3231.4	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TABLE 18(b) (CONTINUED)

CON=13	Z=38	Z=39	Z=40	Z=41	Z=42	Z=43	Z=44
26	2999.1	3148.3	3226.5	3399.4	3601.4	3793.9	3981.3
27	2996.8	3178.8	3255.7	3437.7	3624.6	3816.6	4013.6
28	2997.7	3168.5	3244.3	3425.2	3611.1	3801.9	3997.7
29	2994.3	3165.1	3241.9	3421.6	3607.3	3797.9	3993.5
30	2990.9	3161.8	3236.7	3416.9	3602.5	3793.0	3988.5
31	2987.4	3157.6	3233.1	3413.6	3599.0	3789.4	3984.8
32	2987.3	3158.6	3233.7	3413.9	3599.0	3789.0	3983.9
33	2986.0	3156.1	3231.3	3411.4	3596.4	3786.3	3981.2
34	2983.9	3153.0	3228.0	3408.0	3592.9	3782.7	3977.5
35	2981.1	3151.0	3226.0	3406.9	3590.7	3780.5	3975.1
36	2984.3	3153.7	3227.8	3408.2	3593.1	3783.5	3977.4
37	2982.0	3151.6	3225.1	3405.5	3591.2	3779.8	3973.6
38	2979.1	3149.0	3223.7	3403.3	3587.6	3777.3	3971.4
39	2977.2	3148.6	3224.9	3403.4	3586.4	3775.6	3970.6
40	2977.1	3170.1	3256.3	3438.0	3624.9	3816.9	4013.9
41	2985.7	3165.9	3241.0	3421.1	3606.0	3795.8	3990.6
42	2982.5	3169.3	3245.2	3426.0	3611.9	3802.9	3998.6
43	2981.1	3161.1	3236.1	3415.9	3601.6	3791.3	3984.8
44	2984.5	3159.3	3234.2	3414.0	3598.8	3788.5	3983.0
45	2991.1	3165.6	3241.7	3422.5	3608.2	3798.9	3994.5
46	2986.7	3155.4	3233.1	3409.7	3594.3	3783.9	3978.2
47	2985.4	3156.1	3229.9	3409.6	3594.3	3783.9	3978.3
48	2989.7	3161.4	3237.1	3417.7	3603.3	3793.9	3989.4
49	2991.3	3159.9	3235.5	3415.1	3599.5	3788.9	3983.2
50	2982.1	3151.3	3226.4	3406.0	3590.5	3780.0	3974.3

TABLE 18(b) (CONTINUED)

CONFIG	Z=38	Z=39	Z=40	Z=41	Z=42	Z=43	Z=44
51	2837.8	3548.4	3233.9	3414.4	3599.8	3791.2	3985.6
52	2838.4	3547.4	3232.3	3411.7	3586.1	3775.4	3969.5
53	2832.8	3552.1	3226.4	3415.7	3589.8	3778.9	3972.7
54	2838.1	3556.0	3234.5	3414.7	3599.8	3789.9	3984.9
55	2834.3	3548.1	3222.5	3411.6	3582.8	3774.5	3968.1
56	2837.5	3551.1	3227.8	3413.4	3587.4	3776.2	3972.3
57	2836.8	3554.9	3232.1	3412.2	3597.3	3787.2	3982.1
58	2837.8	3544.0	3219.8	3399.0	3583.4	3771.3	3965.4
59	2837.7	3546.9	3221.1	3407.1	3584.0	3773.0	3966.7
60	2838.7	3553.2	3228.8	3419.8	3593.7	3783.6	3978.4
61	2834.4	3547.1	3217.5	3395.8	3579.7	3768.4	3961.9
62	2835.7	3544.8	3218.9	3397.9	3581.8	3774.6	3964.2
63	2851.9	3551.9	3226.8	3416.7	3591.6	3781.4	3976.1
64	2832.2	3541.1	3214.4	3393.8	3577.5	3766.1	3959.6
65*	2837.8	3549.8	3229.4	3398.9	3588.6	3771.4	3964.8
66	2843.7	3553.8	3233.7	3409.3	3594.5	3783.6	3978.7
67*	2837.8	3547.7	3217.8	3397.4	3579.3	3775.3	3959.1
68	2835.6	3548.7	3217.3	3396.8	3583.1	3771.6	3965.5
69	2833.9	3552.7	3227.1	3406.5	3591.5	3781.3	3975.4
70	2832.4	3544.7	3216.4	3395.7	3578.5	3768.5	3956.6
71	2837.6	3542.3	3214.2	3394.8	3579.5	3767.0	3969.5
72	2837.9	3549.3	3224.4	3414.1	3588.5	3777.9	3972.7
73	2839.4	3536.2	3213.6	3391.8	3574.5	3762.5	3955.7
74*	2849.5	3542.2	3233.6	3417.8	3579.3	3766.3	3946.7
75	2871.2	3554.5	3233.2	3398.4	3579.8	3786.5	3975.6

TABLE 18(b) (CONTINUED)

CONFIG	Z=38	Z=39	Z=40	Z=41	Z=42	Z=43	Z=44
76*	2858.3	3040.2	3139.6	3291.9	3564.1	3780.3	3951.6
77	2912.3	3074.1	3254.8	3432.6	3619.3	3811.1	4007.9
78	2897.2	3069.9	3245.3	3426.9	3613.4	3805.0	4001.5
79	2889.8	3059.3	3234.7	3414.4	3599.2	3788.8	3983.3
80	2893.7	3064.4	3241.1	3423.7	3606.4	3797.1	3992.6
81	2885.5	3056.3	3231.1	3409.6	3594.2	3783.6	3977.9
82	2889.7	3059.2	3234.7	3415.1	3600.5	3791.0	3986.3
83	2879.7	3049.2	3223.7	3403.1	3587.4	3776.8	3970.7
84	2884.3	3054.1	3228.7	3408.3	3592.8	3782.4	3976.6
85	2893.4	3061.2	3236.6	3417.2	3602.6	3793.1	3988.5
86	2884.9	3052.4	3226.9	3406.6	3590.7	3778.1	3972.2
87	2886.3	3055.3	3231.2	3411.5	3596.8	3787.0	3982.2
88	2875.8	3045.1	3219.6	3398.7	3582.9	3772.0	3965.8
89	2884.3	3049.3	3226.5	3404.0	3588.5	3777.9	3972.1
90	2886.0	3056.5	3232.0	3412.4	3597.9	3788.2	3983.5
91	2876.6	3046.3	3220.4	3399.7	3584.6	3773.2	3967.3
92	2881.0	3051.3	3226.6	3406.8	3592.0	3782.1	3977.2
93	2871.6	3040.9	3215.0	3394.2	3578.2	3767.1	3961.6
94	2877.1	3046.6	3221.2	3400.4	3584.7	3774.0	3968.6
95	2883.1	3053.5	3228.3	3408.1	3594.4	3784.6	3979.8
96	2873.7	3043.1	3217.3	3396.6	3581.7	3769.7	3963.7
97	2878.2	3048.4	3223.5	3403.6	3588.6	3778.6	3973.6
98	2868.6	3037.9	3212.0	3391.2	3574.9	3763.7	3957.4
99	2877.9	3047.6	3221.1	3400.1	3584.1	3772.9	3966.5
100	2884.4	3054.5	3229.5	3409.5	3594.4	3784.3	3979.6

TABLE 18(b) (CONTINUED)

CONFIG	Z=38	Z=39	Z=40	Z=41	Z=42	Z=43	Z=44
101	2874.6	3043.3	3217.5	3396.4	3580.6	3768.8	3962.3
102	2876.4	3049.3	3224.2	3403.9	3586.6	3778.3	3972.8
103	2869.5	3033.4	3212.1	3390.8	3574.3	3762.7	3956.0
104	2875.5	3044.7	3218.8	3397.5	3581.5	3770.3	3963.9
105	2882.1	3052.1	3227.2	3407.0	3591.9	3781.6	3976.3
106	2872.2	3041.4	3216.1	3393.9	3577.7	3765.8	3959.5
107	2877.2	3047.0	3221.9	3401.4	3586.2	3775.5	3970.1
108	2867.3	3035.2	3209.1	3388.2	3571.7	3760.1	3953.4
109	2872.8	3041.3	3215.7	3394.6	3578.4	3767.0	3960.6
110	2879.1	3049.1	3223.8	3403.6	3588.3	3778.0	3972.6
111	2869.3	3038.2	3211.9	3390.6	3574.2	3762.7	3956.6
112	2874.1	3042.9	3218.5	3398.1	3582.6	3772.1	3966.5
113	2864.4	3032.1	3206.7	3385.1	3568.4	3756.8	3949.9
114	2871.8	3039.7	3213.6	3392.4	3576.1	3764.6	3958.0
115	2877.3	3047.1	3221.9	3401.6	3586.2	3775.8	3970.3
116	2867.6	3036.3	3210.0	3388.6	3572.2	3760.6	3953.8
117	2872.3	3042.3	3216.6	3396.1	3580.5	3769.9	3964.2
118	2868.6	3037.2	3204.7	3383.2	3566.4	3754.6	3947.6
119*	2876.0	3042.5	3215.7	3391.8	3580.3	3765.6	3959.1
120	2870.9	3045.2	3224.6	3404.3	3589.1	3779.4	3972.1
121*	2877.5	3044.4	3212.2	3393.2	3577.8	3765.8	3953.4
122	2874.4	3043.8	3217.7	3399.1	3582.8	3772.6	3965.4
123	2865.6	3033.6	3206.6	3384.5	3566.5	3754.9	3946.8
124	2871.3	3041.3	3214.1	3392.2	3575.1	3763.5	3956.5
125	2877.7	3047.6	3222.4	3401.1	3585.4	3775.3	3969.4

TABLE 18(b) (CONTINUED)

CONFIG	Z=38	Z=39	Z=40	Z=41	Z=42	Z=43	Z=44
126	2865.9	3037.3	3211.4	3387.4	3570.9	3759.4	3954.6
127	2872.5	3042.5	3216.4	3392.4	3576.2	3764.2	3958.5
128	2863.8	3031.9	3206.5	3384.8	3566.0	3752.4	3947.9
129	2869.1	3037.2	3211.6	3389.5	3572.9	3761.2	3954.1
130	2875.1	3045.2	3219.5	3399.1	3582.2	3772.6	3966.6
131	2864.8	3034.5	3207.6	3385.5	3568.9	3757.2	3950.4
132	2873.5	3044.0	3214.3	3393.6	3577.7	3766.7	3960.6
133	2867.8	3038.3	3208.2	3384.7	3563.4	3750.7	3943.9
134*	2880.4	3028.3	3214.4	3383.8	3565.1	3786.8	3952.3
135	2881.6	3054.3	3222.1	3397.3	3579.2	3774.3	3966.6
136*	2867.8	3031.1	3204.1	3374.1	3566.5	3757.5	3947.8
137	2875.4	3047.8	3212.3	3454.3	3582.4	3765.1	3961.5
138	2876.6	3025.4	3130.8	3346.1	3535.9	3752.7	3924.1

TABLE 18(b) (CONTINUED)

CONFIG	Z=45	Z=46	Z=47	Z=48	Z=49	Z=50	Z=51
1	4228.6	4375.4	4647.7	4865.1	5087.4	5314.8	5547.1
2	4214.2	4421.3	4631.4	4847.6	5068.5	5294.5	5525.4
3	4211.3	4417.4	4629.4	4844.3	5065.2	5291.1	5521.8
4	4218.1	4414.1	4625.4	4840.9	5061.7	5287.5	5518.2
5	4216.4	4412.4	4623.3	4839.2	5060.0	5285.9	5516.6
6	4211.2	4406.6	4618.9	4832.1	5052.3	5277.4	5507.4
7	4211.1	4405.2	4618.6	4830.9	5051.0	5276.1	5506.1
8	4198.1	4413.3	4617.6	4828.8	5048.9	5273.9	5503.8
9	4196.4	4401.6	4611.9	4825.9	5047.1	5272.0	5501.9
10	4194.2	4399.1	4609.1	4823.9	5043.6	5268.2	5497.8
11	4193.4	4398.3	4608.2	4823.1	5042.7	5267.3	5496.9
12	4192.3	4397.2	4607.1	4821.8	5041.5	5266.1	5495.5
13	4191.1	4394.9	4604.5	4819.1	5038.5	5262.9	5492.2
14	4202.1	4409.3	4641.5	4856.6	5078.0	5307.9	5541.1
15	4206.9	4411.5	4621.2	4836.7	5057.5	5283.2	5513.9
16	4211.1	4416.2	4616.7	4832.2	5052.7	5278.2	5508.7
17	4196.4	4401.1	4611.5	4827.1	5047.4	5272.9	5503.1
18	4191.5	4397.1	4607.3	4822.7	5043.1	5268.2	5498.5
19	4193.3	4395.2	4605.1	4819.9	5039.7	5264.4	5494.6
20	4197.3	4392.3	4602.1	4817.1	5036.7	5261.4	5491.6
21	4183.6	4388.3	4599.1	4813.8	5032.4	5256.8	5486.3
22	4191.1	4385.9	4595.5	4810.1	5029.6	5254.1	5483.4
23	4187.2	4387.3	4596.4	4811.9	5030.3	5253.5	5482.2
24	4189.3	4385.1	4595.2	4811.6	5027.1	5252.6	5480.4
25	4177.2	4381.2	4593.9	4805.3	5024.2	5248.4	5477.2

TABLE 18(b) (CONTINUED)

CONFIG	Z=45	Z=46	Z=47	Z=48	Z=49	Z=50	Z=51
26	4198.8	4377.5	4583.5	4811.6	5030.1	5256.2	5464.7
27	4215.5	4422.5	4634.4	4851.4	5073.4	5300.3	5532.3
28	4198.2	4403.7	4614.2	4829.7	5050.2	5275.6	5506.1
29	4194.8	4399.5	4609.8	4825.1	5045.4	5270.7	5501.9
30	4196.8	4394.3	4604.6	4819.9	5041.1	5269.3	5495.4
31	4185.1	4393.3	4604.5	4815.6	5035.7	5259.8	5490.6
32	4193.8	4398.6	4599.3	4812.9	5032.5	5257.0	5486.4
33	4187.9	4388.6	4598.2	4809.9	5029.3	5254.0	5483.4
34	4177.2	4381.3	4591.3	4805.8	5025.2	5249.5	5478.8
35	4174.7	4376.3	4589.7	4803.1	5022.4	5246.7	5475.8
36	4177.4	4383.2	4589.9	4802.8	5021.8	5246.5	5476.1
37	4173.2	4378.5	4588.5	4801.7	5020.3	5244.5	5472.7
38	4174.8	4375.2	4584.3	4798.2	5017.1	5241.3	5469.8
39	4174.9	4383.5	4587.1	4805.1	5014.5	5245.9	5476.8
40	4215.9	4422.8	4634.8	4851.7	5073.7	5300.6	5532.6
41	4196.2	4394.7	4604.1	4812.4	5037.7	5261.8	5493.9
42	4197.2	4403.7	4615.2	4823.6	5051.2	5275.6	5507.2
43	4184.3	4383.6	4597.8	4812.1	5031.1	5255.0	5483.8
44	4192.2	4386.3	4595.2	4809.3	5029.6	5252.5	5481.5
45	4195.2	4403.4	4613.3	4826.1	5046.4	5271.7	5502.6
46	4177.3	4381.1	4591.6	4813.9	5022.9	5246.8	5475.5
47	4177.5	4381.6	4591.6	4814.5	5023.4	5247.4	5476.2
48	4196.9	4395.2	4605.5	4822.8	5041.1	5266.2	5496.4
49	4172.3	4376.2	4585.1	4798.8	5017.0	5241.3	5469.9
50	4173.3	4377.3	4586.2	4800.6	5018.9	5242.7	5471.4

TABLE 18(b) (CONTINUED)

CONFIG	Z=45	Z=46	Z=47	Z=48	Z=49	Z=50	Z=51
51	4185.0	4331.2	4514.4	4816.6	5036.7	5261.7	5491.8
52	4176.5	4372.3	4581.9	4794.6	5013.3	5236.9	5465.4
53	4171.2	4374.7	4583.1	4796.4	5014.7	5237.9	5465.9
54	4184.8	4389.5	4595.2	4813.2	5032.5	5258.3	5487.4
55	4166.7	4369.9	4579.1	4791.2	5009.4	5232.5	5460.2
56	4168.4	4371.9	4582.5	4793.5	5011.9	5235.4	5462.8
57	4181.9	4386.7	4596.3	4811.9	5034.4	5255.0	5484.3
58	4164.0	4367.2	4575.2	4788.2	5006.8	5229.6	5457.2
59	4165.1	4368.3	4576.7	4789.7	5007.8	5230.9	5458.9
60	4178.1	4382.7	4592.3	4805.9	5026.2	5250.5	5479.8
61	4161.1	4363.1	4571.3	4784.3	5002.2	5225.2	5453.5
62	4162.5	4365.7	4573.3	4787.6	5005.0	5228.0	5455.8
63	4175.7	4380.2	4589.7	4806.1	5023.4	5247.7	5476.9
64	4157.7	4360.3	4568.9	4781.7	4999.6	5222.4	5450.6
65*	4165.8	4362.3	4570.4	4795.6	5005.5	5225.2	5459.1
66	4178.4	4382.1	4590.3	4805.1	5022.1	5248.4	5478.0
67*	4161.1	4359.3	4568.4	4786.7	4999.9	5226.4	5456.2
68	4162.6	4365.4	4573.2	4785.7	5004.8	5227.3	5449.6
69	4175.1	4379.4	4588.2	4803.3	5022.2	5246.3	5474.7
70	4157.8	4359.3	4566.4	4783.7	4999.4	5221.9	5443.9
71	4159.3	4361.7	4570.9	4782.2	5004.8	5222.2	5450.1
72	4171.7	4377.1	4585.4	4799.2	5019.1	5242.4	5470.6
73	4154.6	4356.6	4563.4	4777.2	4996.7	5216.9	5444.6
74*	4159.2	4335.5	4582.9	4792.5	4992.1	5264.9	5424.6
75	4174.7	4384.5	4583.3	4817.3	5018.1	5261.0	5466.7

TABLE 18(b) (CONTINUED)

CONFIG	Z=45	Z=46	Z=47	Z=48	Z=49	Z=50	Z=51
76*	4137.8	4302.7	4563.4	4777.9	4976.8	5204.4	5457.0
77	4209.7	4416.4	4628.2	4844.0	5066.7	5293.4	5525.2
78	4203.1	4409.5	4621.2	4837.7	5059.3	5285.8	5517.4
79	4192.7	4397.	4606.2	4821.3	5042.3	5268.2	5499.6
80	4193.0	4399.3	4608.7	4823.9	5044.2	5269.5	5499.8
81	4177.2	4381.3	4590.3	4804.2	5023.1	5246.8	5475.4
82	4184.5	4391.6	4601.8	4816.8	5036.9	5262.3	5492.0
83	4169.7	4373.6	4582.4	4796.1	5014.7	5238.2	5466.6
84	4176.6	4379.5	4589.3	4802.2	5021.2	5245.0	5473.6
85	4183.9	4386.1	4596.3	4809.4	5028.5	5254.7	5484.7
86	4171.1	4374.4	4583.5	4797.3	5016.1	5239.6	5468.2
87	4192.3	4397.4	4607.4	4822.3	5042.2	5267.1	5497.6
88	4164.5	4366.1	4576.6	4790.1	5008.7	5232.2	5460.5
89	4171.1	4374.3	4583.7	4797.4	5016.3	5239.9	5468.5
90	4187.7	4392.3	4599.1	4814.2	5034.2	5259.2	5489.2
91	4166.2	4369.7	4578.6	4792.1	5011.8	5234.3	5462.7
92	4177.3	4382.3	4592.2	4807.1	5027.4	5251.7	5481.5
93	4159.6	4363.2	4571.7	4785.6	5003.5	5226.9	5455.6
94	4166.9	4370.7	4579.4	4793.6	5011.7	5235.3	5463.7
95	4176.6	4385.1	4595.1	4809.6	5028.3	5254.7	5484.6
96	4159.4	4366.1	4574.5	4789.1	5006.6	5230.0	5458.3
97	4173.5	4378.3	4588.1	4802.9	5022.5	5247.3	5476.9
98	4166.8	4369.4	4577.9	4791.1	4969.4	5228.5	5459.6
99	4164.9	4368.1	4575.4	4789.4	5007.6	5230.6	5458.4
100	4175.7	4383.3	4592.9	4807.3	5026.7	5251.9	5480.2

TABLE 18(b) (CONTINUED)

CONFIG	Z=45	Z=46	Z=47	Z=48	Z=49	Z=50	Z=51
101	4153.8	4363.6	4571.8	4784.6	5002.6	5225.4	5453.1
102	4172.3	4376.7	4586.1	4800.3	5019.5	5243.6	5472.7
103	4154.1	4367.0	4566.0	4777.6	4995.5	5218.0	5445.4
104	4162.1	4365.1	4573.8	4785.6	5004.9	5227.9	5455.1
105	4175.9	4381.5	4589.8	4804.4	5023.7	5248.6	5477.2
106	4157.8	4360.3	4568.9	4781.6	4999.4	5222.7	5450.1
107	4165.4	4373.9	4583.1	4797.4	5016.4	5240.6	5469.6
108	4151.3	4354.2	4561.9	4774.9	4992.4	5215.2	5442.2
109	4158.7	4361.3	4569.9	4782.8	5000.8	5223.6	5451.4
110	4172.1	4376.6	4586.0	4801.2	5019.5	5243.6	5472.7
111	4154.1	4367.1	4567.1	4777.7	4995.6	5218.2	5445.9
112	4155.8	4371.0	4579.2	4793.3	5012.3	5236.2	5465.1
113	4147.7	4355.5	4559.3	4774.8	4988.4	5210.9	5438.3
114	4156.2	4359.2	4567.2	4782.6	4997.9	5220.7	5448.2
115	4169.7	4374.1	4583.3	4797.6	5016.7	5240.8	5469.6
116	4151.9	4356.7	4562.5	4775.2	4992.9	5215.5	5443.1
117	4163.4	4367.5	4576.6	4790.6	5009.6	5233.4	5462.2
118	4149.4	4348.2	4555.3	4768.3	4985.8	5208.1	5435.4
119*	4159.6	4369.4	4571.6	4781.5	5000.3	5227.6	5455.1
120	4173.3	4376.2	4586.3	4799.9	5017.6	5241.8	5468.2
121*	4153.8	4365.2	4566.2	4777.6	4992.4	5215.1	5444.3
122	4165.7	4367.2	4574.2	4791.1	5011.4	5233.3	5461.7
123	4149.8	4347.5	4557.2	4774.6	4990.7	5212.1	5439.9
124	4156.5	4356.2	4566.5	4778.9	4996.4	5219.1	5445.7
125	4169.6	4373.4	4582.2	4795.6	5015.1	5238.5	5466.5

TABLE 18(b) (CONTINUED)

CONFIG	Z=45	Z=46	Z=47	Z=48	Z=49	Z=50	Z=51
126	4152.3	4352.9	4563.3	4773.3	4988.9	5214.7	5438.2
127	4162.5	4367.4	4575.9	4789.2	5006.1	5231.8	5459.4
128	4145.5	4346.2	4554.2	4767.4	4970.5	5204.9	5434.8
129	4163.7	4366.2	4572.3	4775.4	4993.4	5214.9	5442.8
130	4165.0	4357.0	4579.1	4792.8	5011.6	5235.7	5463.2
131	4145.5	4355.4	4556.9	4770.6	4988.0	5209.5	5437.5
132	4159.7	4363.4	4572.3	4785.8	5004.6	5227.9	5456.3
133	4141.4	4344.4	4553.9	4763.2	4986.2	5202.9	5430.6
134*	4174.7	4339.0	4554.9	4781.3	4977.4	5192.3	5449.2
135	4160.7	4377.7	4594.9	4797.5	5017.1	5225.7	5458.5
136*	4185.3	4348.2	4534.1	4779.7	4979.6	5221.4	5467.5
137	4156.7	4368.7	4587.4	4791.9	5013.0	5234.4	5454.1
138	4134.6	4341.6	4525.7	4771.5	4964.3	5192.1	5420.2

TABLE 18(b) (CONTINUED)

CONFIG	Z=52	Z=53	Z=54	Z=55	Z=56	Z=57	Z=58
1	5754.5	6026.3	6274.2	6526.6	6784.0	7046.3	7313.7
2	5761.3	6012.1	6247.9	6498.6	6754.3	7014.9	7286.5
3	5757.6	5995.7	6244.1	6494.8	6751.1	7013.5	7275.1
4	5753.8	5994.4	6240.3	6491.4	6745.8	7006.2	7271.5
5	5747.2	5992.9	6238.4	6488.9	6744.2	7004.5	7269.9
6	5742.4	5992.2	6227.6	6476.8	6731.4	6991.3	7255.5
7	5741.6	5987.9	6225.6	6475.3	6729.9	6989.5	7254.6
8	5734.7	5978.5	6223.3	6473.1	6727.6	6987.1	7251.6
9	5736.7	5976.3	6221.1	6471.8	6725.3	6984.8	7249.2
10	5732.3	5971.7	6216.3	6465.2	6719.4	6978.5	7242.4
11	5731.7	5971.7	6215.1	6464.2	6718.7	6977.4	7241.3
12	5730.6	5969.3	6213.6	6462.7	6716.8	6975.8	7239.7
13	5726.4	5965.4	6209.5	6458.4	6712.2	6970.9	7234.6
14	5777.3	6019.5	6266.6	6518.8	6771.0	7038.1	7305.3
15	5740.5	5983.1	6235.3	6485.5	6746.8	7001.0	7266.1
16	5744.1	5984.4	6229.7	6479.9	6735.0	6995.1	7260.1
17	5734.4	5978.5	6223.7	6473.6	6728.8	6988.8	7253.7
18	5733.7	5977.2	6218.8	6468.9	6723.8	6983.7	7248.6
19	5728.6	5969.1	6213.5	6461.8	6715.4	6975.2	7239.3
20	5725.3	5964.7	6209.1	6458.7	6712.5	6971.5	7235.9
21	5724.7	5965.1	6208.4	6458.6	6707.6	6966.5	7230.5
22	5717.7	5956.9	6201.1	6450.2	6704.3	6963.2	7227.1
23	5719.4	5964.1	6203.2	6456.1	6712.7	6969.3	7221.5
24	5715.1	5953.9	6196.8	6446.9	6701.3	6957.6	7221.2
25	5711.1	5959.6	6194.1	6442.5	6695.8	6955.5	7217.6

TABLE 18(b) (CONTINUED)

CONFIG	Z=52	Z=53	Z=54	Z=55	Z=56	Z=57	Z=58
25	5711.4	5955.1	6194.9	6435.2	6676.5	6965.5	7231.5
27	5745.9	5911.2	6255.2	6511.1	6767.1	7029.3	7296.4
28	5741.5	5991.9	6225.9	6476.9	6732.9	6992.9	7256.9
29	5736.1	5976.3	6221.3	6471.3	6726.2	6986.1	7251.4
30	5733.6	5967.4	6215.4	6465.3	6724.1	6979.9	7244.5
31	5726.8	5965.7	6217.6	6460.4	6715.1	6974.9	7239.5
32	5732.9	5960.1	6214.3	6453.3	6717.4	6966.4	7234.3
33	5717.5	5957.7	6211.8	6449.7	6713.7	6963.7	7226.9
34	5713.4	5952.1	6196.1	6445.1	6699.4	6957.8	7221.5
35	5736.9	5949.1	6192.9	6441.8	6695.7	6954.4	7218.1
36	5711.8	5946.3	6194.5	6443.4	6694.9	6952.4	7214.5
37	5716.9	5945.1	6189.1	6438.2	6692.1	6949.4	7213.3
38	5713.7	5942.4	6195.6	6434.1	6687.6	6946.1	7208.7
39	5698.8	5943.1	6191.8	6413.7	6699.9	6945.6	7210.1
40	5759.6	6011.5	6258.5	6510.5	6767.4	7029.4	7296.3
41	5724.8	5963.5	6207.4	6456.4	6709.6	6968.4	7231.3
42	5749.6	5932.8	6226.5	6478.5	6733.1	6993.1	7258.6
43	5717.4	5956.3	6199.8	6448.3	6701.6	6959.9	7223.6
44	5715.2	5953.4	6196.8	6445.2	6699.3	6956.6	7219.8
45	5737.3	5977.4	6222.4	6472.5	6727.4	6987.3	7252.2
46	5736.1	5947.3	6197.4	6438.6	6691.5	6949.7	7213.6
47	5709.9	5948.3	6191.5	6439.6	6692.7	6950.7	7213.6
48	5731.4	5971.5	6216.4	6466.7	6721.2	6981.3	7245.7
49	5733.4	5941.7	6184.7	6432.7	6685.6	6943.5	7206.2
50	5704.9	5943.2	6186.5	6434.6	6687.5	6945.5	7208.4

TABLE 18(b) (CONTINUED)

CONFIG	Z=52	Z=53	Z=54	Z=55	Z=56	Z=57	Z=58
51	5725.8	5966.7	6211.6	6461.4	6716.2	6975.9	7240.6
52	5668.8	5917.1	6171.1	6427.9	6688.8	6953.6	7221.3
53	5659.9	5936.6	6178.9	6426.4	6678.7	5936.1	7198.2
54	5721.8	5961.1	6208.3	6454.4	6708.5	6967.5	7231.4
55	5693.	5934.5	6173.8	6419.5	6672.1	6929.4	7191.3
56	5695.7	5932.7	6175.9	6423.3	6675.7	6933.5	7195.5
57	5718.7	5957.7	6202.9	6451.4	6704.9	6963.7	7228.2
58	5688.4	5927.	6169.5	6416.8	6668.9	6925.9	7189.1
59	5691.7	5930.3	6171.3	6418.7	6670.8	6927.9	7189.9
60	5714.1	5955.3	6197.3	6446.3	6700.2	5959.	7222.7
61	5685.6	5928.	6165.1	6412.2	6664.1	6921.0	7182.8
62	5698.5	5926.	6168.2	6415.4	6667.5	6924.5	7186.2
63	5711.0	5954.1	6194.1	6443.	6696.8	6955.6	7219.3
64	5682.6	5919.9	6162.	6408.	6661.9	6917.6	7179.3
65*	5693.1	5921.4	6175.8	6417.	6667.9	6923.5	7193.6
66	5713.5	5954.6	6196.1	6446.3	6695.9	6952.5	7216.5
67*	5674.9	5917.	6153.1	6414.4	6664.2	6917.8	7176.6
68	5695.7	5925.3	6164.5	6414.1	6662.1	6918.5	7184.
69	5709.4	5944.5	6183.3	6439.4	6693.5	6950.4	7215.5
70	5677.6	5919.2	6155.3	6416.1	6668.5	6912.6	7175.9
71	5682.5	5913.2	6161.5	6417.3	6669.1	6915.5	7177.6
72	5704.6	5943.5	6186.7	6435.5	6689.	6947.2	7210.3
73	5676.7	5912.7	6154.9	6399.9	6652.3	6908.3	7169.4
74*	5686.4	5941.4	6155.2	6415.1	6676.9	6906.5	7189.2
75	5696.5	5941.	6182.4	6435.7	6691.3	6933.5	7206.5

TABLE 18(b) (CONTINUED)

CONFIG	Z=52	Z=53	Z=54	Z=55	Z=56	Z=57	Z=58
76*	5[illegible].1	59[illegible].6	6151.4	6384.8	6633.7	6977.4	7163.5
77	5[illegible].6	5[illegible].7	6256.5	6532.3	6759.[illegible]	7109.3	7287.6
78	57[illegible].9	5965.[illegible]	6242.[illegible]	6493.6	6751.1	7111.7	7279.2
79	5715.7	5934.7	6197.9	6446.2	6699.6	6957.8	7220.9
80	57[illegible].1	59[illegible].1	6[illegible].1	647[illegible]	6724.[illegible]	6984.5	7249.4
81	57[illegible].[illegible]	5947.4	6197.9	6439.[illegible]	6692.1	6950.2	7213.1
82	5727.[illegible]	5966.[illegible]	6211.6	6451.3	6716.[illegible]	6975.6	724[illegible].2
83	5[illegible].[illegible]	59[illegible].1	6131.2	6429.[illegible]	66[illegible].1	69[illegible].[illegible]	7202.7
84	57[illegible].1	59[illegible].[illegible]	6198.5	6436.5	6689.3	6947.7	721[illegible].6
85	573[illegible].7	59[illegible].7	6214.5	6454.4	6719.1	6978.8	7243.5
86	57[illegible].5	59[illegible].6	6180.4	6430.3	6683.2	6941.2	72[illegible].1
87	5721.[illegible]	5961.5	62[illegible].2	6455.8	671[illegible].3	6969.8	7234.3
88	5[illegible].5	59[illegible].[illegible]	6174.1	6421.7	6674.4	6932.2	7194.8
89	57[illegible].[illegible]	59[illegible].2	6185.2	6431.2	66[illegible].1	6941.9	79[illegible].6
90	5724.[illegible]	5963.[illegible]	62[illegible].5	6458.3	6712.[illegible]	6972.5	7237.1
91	5[illegible].[illegible]	59[illegible].	61[illegible].[illegible]	6424.7	6677.4	6935.1	7197.7
92	5716.1	59[illegible].7	62[illegible].3	6449.8	67[illegible].2	6963.6	7227.[illegible]
93	5[illegible].[illegible]	5926.9	6165.5	6416.2	66[illegible].6	5926.1	718[illegible].[illegible]
94	5697.1	59[illegible].3	6174.3	6426.1	6679.[illegible]	6936.8	7199.4
95	5710.4	59[illegible].1	62[illegible].8	6453.4	67[illegible].[illegible]	6967.5	7232.[illegible]
96	5[illegible].4	59[illegible].4	6172.3	6433.1	6672.7	6933.3	7192.8
97	5711.5	59[illegible].[illegible]	6185.5	6444.[illegible]	6689.3	6958.6	7222.9
98	5[illegible].6	59[illegible].4	61[illegible].[illegible]	6411.6	66[illegible].1	6921.5	7193.[illegible]
99	5[illegible].1	59[illegible].5	617[illegible].8	6417.6	66[illegible].1	6927.3	7189.1
100	5714.4	5953.[illegible]	6197.6	6446.5	67[illegible].4	6959.2	7222.9

TABLE 18(b) (CONTINUED)

CONFIG	Z=52	Z=53	Z=54	Z=55	Z=56	Z=57	Z=58
101	5895.5	6022.9	6154.9	6412.0	6676.4	6921.9	7182.8
102	5774.6	5945.5	6139.3	6439.6	6691.7	6951.3	7213.8
103	5877.7	6014.9	6156.7	6413.5	6655.4	6912.9	7173.8
104	5847.7	5925.1	6147.7	6414.9	6666.3	6924.1	7185.2
105	5711.4	5931.3	6104.3	6443.2	6691.9	6955.5	7219.6
106	5802.4	5910.3	6151.9	6408.9	6667.3	6917.8	7179.9
107	5777.4	5943.3	6185.4	6434.6	6686.3	6946.7	7210.5
108	5774.2	5911.4	6153.9	6412.5	6662.5	6918.9	7176.8
109	5837.9	5921.9	6151.3	6411.4	6662.3	6919.2	7181.6
110	5776.7	5945.7	6183.5	6438.3	6690.1	6950.7	7214.2
111	5874.2	5911.1	6157.4	6434.2	6654.7	6912.7	7174.4
112	5839.6	5937.7	6181.3	6429.9	6683.5	6941.9	7205.2
113	5867.4	5947.4	6149.1	6395.8	6647.3	6903.9	7165.5
114	5844.7	5910.1	6156.1	6417.1	6651.9	6915.7	7177.3
115	5783.7	5942.6	6186.4	6435.1	6688.7	6947.3	7214.8
116	5875.7	5918.4	6154.3	6421.2	6652.8	6909.5	7171.6
117	5834.9	5934.1	6179.9	6426.7	6681.1	6938.5	7201.5
118	5867.5	5904.4	6146.1	6392.7	6644.3	6900.7	7162.1
119*	5798.2	5915.3	6155.5	6409.9	6653.4	6916.9	7179.7
120	5874.9	5943.1	6187.3	6434.6	6686.3	6944.9	7209.5
121*	5877.2	5911.3	6146.9	6403.6	6648.5	6909.8	7169.6
122	5837.7	5940.3	6178.5	6427.4	6681.4	6937.9	7198.2
123	5865.5	5914.1	6147.4	6397.6	6644.1	6906.1	7163.6
124	5874.9	5917.4	6151.4	6406.3	6653.9	6911.3	7172.2
125	5781.5	5930.1	6183.3	6431.5	6684.9	6941.9	7205.8

TABLE 18(b) (CONCLUDED)

CONFIG	Z=52	Z=53	Z=54	Z=55	Z=56	Z=57	Z=58
126	5772.9	5911.3	6146.4	6398.6	6645.1	6902.7	7165.2
127	5783.4	5921.9	6174.6	6424.1	6677.5	6933.1	7197.6
128	5744.7	5893.6	6137.9	6391.2	6637.4	6897.1	7153.8
129	5774.3	5911.3	6153.5	6399.6	6649.5	6916.9	7167.9
130	5787.4	5936.1	6179.2	6427.4	6681.3	6939.2	7201.6
131	5769.9	5918.1	6148.1	6392.4	6644.8	6903.3	7161.8
132	5799.7	5927.9	6171.5	6418.9	6672.1	6933.2	7192.8
133	5761.1	5898.8	6139.8	6384.2	6637.1	6891.7	7153.1
134	5773.6	5923.8	6169.3	6411.9	6665.3	6932.2	7183.1
135	5772.7	5916.7	6181.6	6431.7	6678.3	6933.9	7205.1
136	5780.2	5899.3	6154.3	6392.3	6635.2	6889.1	7167.6
137	5799.6	5934.3	6179.3	6414.4	6681.5	6919.7	7180.5
138	5754.3	5902.6	6167.7	6372.4	6673.3	6868.6	7139.6

TABLE 19(a)–CONFIGURATION LIST FOR 20 ELECTRONS

CONFIGURATION NUMBER	PARITY	OCCUPATION NUMBERS 1S 2S 2P 3S 3P 3D 4S 4P 4D 4F 5S 5P 5D 5F 6S 6P 6D 7S
GROUND CONFIGURATION		
1		2 2 6 2 6 2
ONE-ELECTRON EXCITED CONFIGURATIONS		
2		2 2 6 2 6 1 1 0 0 0 0 0 0 0 1 0 0 0 0
3	ODD	2 2 6 2 6 1 0 1 0 0 0 0 0 0 1 0 0 0 0
4		2 2 6 2 6 1 0 0 1 0 0 0 0 0 0 1 0 0 0
5	ODD	2 2 6 2 6 1 0 0 0 1 0 0 0 0 0 0 1 0 0
6		2 2 6 2 6 1 0 0 0 0 1 0 0 0 0 0 0 1 0
7	ODD	2 2 6 2 6 1 0 0 0 0 0 1 0 0 0 0 0 0 1
8		2 2 6 2 6 1 0 0 0 0 0 0 1 0 0 0 0 0 0
9	ODD	2 2 6 2 6 1 0 0 0 0 0 0 0 1 0 0 0 0 0
10		2 2 6 2 6 1 0 0 0 0 0 0 0 0 1 0 0 0 0
11	ODD	2 2 6 2 6 1 0 0 0 0 0 0 0 0 0 1 0 0 0
12		2 2 6 2 6 1 0 0 0 0 0 0 0 0 0 0 1 0 0
13		2 2 6 2 6 1 0 0 0 0 0 0 0 0 0 0 0 1 0
14	ODD	2 2 6 2 6 1 0 0 0 0 0 0 0 0 0 0 0 0 1
15	EVEN	2 2 6 2 5 2 1 0 0 0 0 0 0 0 0 0 0 0 0
16		2 2 6 2 5 2 0 1 0 0 0 0 0 0 0 0 0 0 0
17	ODD	2 2 6 2 5 2 0 0 1 0 0 0 0 0 0 0 0 0 0
18		2 2 6 2 5 2 0 0 0 1 0 0 0 0 0 0 0 0 0
19	ODD	2 2 6 2 5 2 0 0 0 0 1 0 0 0 0 0 0 0 0
20		2 2 6 2 5 2 0 0 0 0 0 1 0 0 0 0 0 0 0
21	EVEN	2 2 6 2 5 2 0 0 0 0 0 0 1 0 0 0 0 0 0
22		2 2 6 2 5 2 0 0 0 0 0 0 0 1 0 0 0 0 0
23	EVEN	2 2 6 2 5 2 0 0 0 0 0 0 0 0 1 0 0 0 0
24		2 2 6 2 5 2 0 0 0 0 0 0 0 0 0 1 0 0 0
25	EVEN	2 2 6 2 5 2 0 0 0 0 0 0 0 0 0 0 1 0 0
26	EVEN	2 2 6 2 5 2 0 0 0 0 0 0 0 0 0 0 0 1 0
27		2 2 6 1 6 2 0 0 0 0 0 0 0 0 0 0 0 0 1
28		2 2 6 1 6 2 1 0 0 0 0 0 0 0 0 0 0 0 0
29	ODD	2 2 6 1 6 2 0 1 0 0 0 0 0 0 0 0 0 0 0
30		2 2 6 1 6 2 0 0 1 0 0 0 0 0 0 0 0 0 0
31	ODD	2 2 6 1 6 2 0 0 0 1 0 0 0 0 0 0 0 0 0
32		2 2 6 1 6 2 0 0 0 0 1 0 0 0 0 0 0 0 0
33	EVEN	2 2 6 1 6 2 0 0 0 0 0 1 0 0 0 0 0 0 0
34		2 2 6 1 6 2 0 0 0 0 0 0 1 0 0 0 0 0 0
35	ODD	2 2 6 1 5 2 1 0 0 0 0 0 0 1 0 0 0 0 0
36		2 2 6 1 6 2 0 0 0 0 0 0 0 0 1 0 0 0 0
37	ODD	2 2 6 1 5 2 0 0 0 0 0 0 0 0 0 1 0 0 0
38		2 2 6 1 6 2 0 0 0 0 0 0 0 0 0 0 1 0 0
39		2 2 6 1 6 2 0 0 0 0 0 0 0 0 0 0 0 1 0
TWO-ELECTRON EXCITED CONFIGURATIONS		
40		2 2 6 2 6 0 2 0 0 0 0 0 0 0 1 0 0 0 0
41	ODD	2 2 6 2 6 0 1 1 0 0 0 0 0 0 1 0 0 0 0
42		2 2 6 2 6 0 1 0 1 0 0 0 0 0 1 0 0 0 0
43	ODD	2 2 6 2 6 0 1 0 0 1 0 0 0 0 1 0 0 0 0
44		2 2 6 2 6 0 1 0 0 0 1 0 0 0 1 0 0 0 0
45	ODD	2 2 6 2 6 0 1 0 0 0 0 1 0 0 1 0 0 0 0
46		2 2 6 2 6 0 1 0 0 0 0 0 1 0 1 0 0 0 0
47	EVEN	2 2 6 2 6 0 1 0 0 0 0 0 0 1 1 0 0 0 0

TABLE 19(a) (CONTINUED)

49		2	2	5	2	6	0	1	0	0	0	0	0	0	0	1	0	0	0
50		2	2	5	2	5	0	1	0	0	0	0	0	0	0	0	0	1	0
51		2	2	5	2	5	0	1	0	0	0	0	0	0	0	0	0	0	1
52		2	2	5	2	4	4	0	0	0	0	0	0	0	0	0	0	0	0
53		2	2	5	2	5	1	2	0	0	0	0	0	0	0	0	0	0	0
54		2	2	5	2	5	3	1	0	0	0	0	0	0	0	0	0	0	0
55		2	2	6	2	4	2	2	0	0	0	0	0	0	0	0	0	0	0
56		2	2	6	2	5	1	1	1	0	0	0	0	0	0	0	0	0	0
57		2	2	5	2	4	3	0	1	0	0	0	0	0	0	0	0	0	0
58		2	2	5	2	4	2	1	1	0	0	0	0	0	0	0	0	0	0
59		2	2	5	2	5	1	1	0	1	0	0	0	0	0	0	0	0	0
60		2	2	6	2	4	3	0	0	1	0	0	0	0	0	0	0	0	0
61		2	2	6	2	4	2	1	0	1	0	0	0	0	0	0	0	0	0
62		2	2	5	2	5	1	1	0	0	1	0	0	0	0	0	0	0	0
63		2	2	5	2	4	3	0	0	0	1	0	0	0	0	0	0	0	0
64		2	2	5	2	4	2	1	0	0	1	0	0	0	0	0	0	0	0
65		2	2	5	2	5	1	1	0	0	0	1	0	0	0	0	0	0	0
66		2	2	5	2	4	3	0	0	0	0	1	0	0	0	0	0	0	0
67		2	2	5	2	4	2	1	0	0	0	1	0	0	0	0	0	0	0
68		2	2	6	2	5	1	1	0	0	0	0	1	0	0	0	0	0	0
69		2	2	5	2	4	3	0	0	0	0	0	1	0	0	0	0	0	0
70		2	2	6	2	4	2	1	0	0	0	0	1	0	0	0	0	0	0
71		2	2	6	2	5	1	1	0	0	0	0	0	1	0	0	0	0	0
72		2	2	6	2	4	3	0	0	0	0	0	0	1	0	0	0	0	0
73		2	2	6	2	4	2	1	0	0	0	0	0	1	0	0	0	0	0
74		2	2	6	2	5	1	1	0	0	0	0	0	0	1	0	0	0	0
75		2	2	5	2	4	3	0	0	0	0	0	0	0	1	0	0	0	0
76		2	2	5	2	4	2	1	0	0	0	0	0	0	1	0	0	0	0
77		2	2	6	2	5	1	1	0	0	0	0	0	0	0	1	0	0	0
78		2	2	6	2	4	3	0	0	0	0	0	0	0	0	1	0	0	0
79		2	2	6	2	4	2	1	0	0	0	0	0	0	0	1	0	0	0
80		2	2	6	2	5	1	1	0	0	0	0	0	0	0	1	0	0	0
81		2	2	5	2	4	3	0	0	0	0	0	0	0	0	1	0	0	0
82		2	2	6	2	4	2	1	0	0	0	0	0	0	0	1	0	0	0
83		2	2	6	2	5	1	1	0	0	0	0	0	0	0	0	1	0	0
84		2	2	6	2	4	3	0	0	0	0	0	0	0	0	0	1	0	0
85		2	2	5	2	4	2	1	0	0	0	0	0	0	0	0	1	0	0
86		2	2	6	2	5	1	1	0	0	0	0	0	0	0	0	0	1	0
87		2	2	6	2	4	3	0	0	0	0	0	0	0	0	0	0	1	0
88		2	2	6	2	4	2	1	0	0	0	0	0	0	0	0	0	1	0
89		2	2	5	1	5	4	0	0	0	0	0	0	0	0	0	0	0	0
90		2	2	6	0	6	4	0	0	0	0	0	0	0	0	0	0	0	0
91		2	2	6	1	6	1	2	0	0	0	0	0	0	0	0	0	0	0
92		2	2	6	1	5	3	1	0	0	0	0	0	0	0	0	0	0	0
93		2	2	6	1	5	2	2	0	0	0	0	0	0	0	0	0	0	0
94		2	2	6	0	5	3	1	0	0	0	0	0	0	0	0	0	0	0
95		2	2	6	0	6	2	2	0	0	0	0	0	0	0	0	0	0	0
96		2	2	6	1	6	1	1	1	0	0	0	0	0	0	0	0	0	0
97		2	2	6	1	5	3	0	1	0	0	0	0	0	0	0	0	0	0
98		2	2	6	1	5	2	1	1	0	0	0	0	0	0	0	0	0	0
99		2	2	6	0	6	3	0	1	0	0	0	0	0	0	0	0	0	0
100		2	2	6	0	6	2	1	1	0	0	0	0	0	0	0	0	0	0
101		2	2	6	1	6	1	1	0	1	0	0	0	0	0	0	0	0	0
102		2	2	6	1	6	2	0	0	1	0	0	0	0	0	0	0	0	0
103		2	2	6	1	5	2	1	0	1	0	0	0	0	0	0	0	0	0
104		2	2	6	0	6	2	0	0	1	0	0	0	0	0	0	0	0	0
105		2	2	6	0	6	2	1	0	1	0	0	0	0	0	0	0	0	0
106		2	2	6	1	6	1	1	0	0	1	0	0	0	0	0	0	0	0
107		2	2	6	1	5	3	0	0	0	1	0	0	0	0	0	0	0	0

TABLE 19(a) (CONCLUDED)

108		2	2	6	1	5	2	1	0	0	1	0	0	0	0	0	0	0	0
109	DDD	2	2	6	0	6	2	0	0	0	1	0	0	0	0	0	0	0	0
110	DDD	2	2	6	0	6	2	1	0	0	1	0	0	0	0	0	0	0	0
111		2	2	6	1	6	1	1	0	0	0	1	0	0	0	0	0	0	0
112	DDD	2	2	6	1	5	3	0	0	0	0	1	0	0	0	0	0	0	0
113	DDD	2	2	6	1	5	2	1	0	0	0	1	0	0	0	0	0	0	0
114		2	2	6	0	6	3	0	0	0	0	1	0	0	0	0	0	0	0
115		2	2	6	0	6	2	1	0	0	0	1	0	0	0	0	0	0	0
116	DDD	2	2	6	1	6	1	1	0	0	0	0	1	0	0	0	0	0	0
117		2	2	6	1	6	3	0	0	0	0	0	1	0	0	0	0	0	0
118		2	2	6	1	5	2	1	0	0	0	0	1	0	0	0	0	0	0
119	DDD	2	2	6	0	6	3	0	0	0	0	0	1	0	0	0	0	0	0
120	DDD	2	2	6	0	6	2	1	0	0	0	0	1	0	0	0	0	0	0
121		2	2	6	1	6	1	1	0	0	0	0	0	1	0	0	0	0	0
122	DDD	2	2	6	1	5	3	0	0	0	0	0	0	1	0	0	0	0	0
123	DDD	2	2	6	1	5	2	1	0	0	0	0	0	1	0	0	0	0	0
124		2	2	6	0	6	3	0	0	0	0	0	0	1	0	0	0	0	0
125		2	2	6	0	6	2	1	0	0	0	0	0	1	0	0	0	0	0
126	DDD	2	2	6	1	6	1	1	0	0	0	0	0	0	1	0	0	0	0
127		2	2	6	1	5	3	0	0	0	0	0	0	0	1	0	0	0	0
128		2	2	6	1	5	2	1	0	0	0	0	0	0	1	0	0	0	0
129	DDD	2	2	6	0	6	3	0	0	0	0	0	0	0	1	0	0	0	0
130	DDD	2	2	6	0	6	2	1	0	0	0	0	0	0	1	0	0	0	0
131		2	2	6	1	6	1	1	0	0	0	0	0	0	0	1	0	0	0
132	DDD	2	2	6	1	5	3	0	0	0	0	0	0	0	0	1	0	0	0
133	DDD	2	2	6	1	5	2	1	0	0	0	0	0	0	0	1	0	0	0
134		2	2	6	0	6	3	0	0	0	0	0	0	0	0	1	0	0	0
135		2	2	6	0	6	2	1	0	0	0	0	0	0	0	1	0	0	0
136	DDD	2	2	6	1	6	1	1	0	0	0	0	0	0	0	0	1	0	0
137		2	2	6	1	5	3	0	0	0	0	0	0	0	0	0	1	0	0
138		2	2	6	1	5	2	1	0	0	0	0	0	0	0	0	1	0	0
139	DDD	2	2	6	0	6	3	0	0	0	0	0	0	0	0	0	1	0	0
140	DDD	2	2	6	0	6	2	1	0	0	0	0	0	0	0	0	1	0	0
141		2	2	6	1	6	1	1	0	0	0	0	0	0	0	0	0	1	0
142	DDD	2	2	6	1	5	3	0	0	0	0	0	0	0	0	0	0	1	0
143	DDD	2	2	6	1	5	2	1	0	0	0	0	0	0	0	0	0	1	0
144		2	2	6	0	6	3	0	0	0	0	0	0	0	0	0	0	1	0
145		2	2	6	0	6	2	1	0	0	0	0	0	0	0	0	0	1	0
146		2	2	6	1	6	1	1	0	0	0	0	0	0	0	0	0	0	1
147	DDD	2	2	6	1	5	3	0	0	0	0	0	0	0	0	0	0	0	1
148	DDD	2	2	6	1	5	2	1	0	0	0	0	0	0	0	0	0	0	1
149		2	2	6	0	6	3	0	0	0	0	0	0	0	0	0	0	0	1
150		2	2	6	0	6	2	1	0	0	0	0	0	0	0	0	0	0	1

TABLE 19(b)–20 ELECTRONS

CONFIG	Z=40	Z=41	Z=42	Z=43	Z=44	Z=45	Z=46
1	3297.8	3482.9	3673.1	3868.5	4069.0	4274.6	4485.2
2	3287.1	3471.1	3660.3	3854.6	4053.9	4258.2	4467.3
3	3283.6	3467.5	3656.4	3850.5	4049.6	4253.8	4462.9
4	3278.8	3462.6	3651.5	3845.4	4044.4	4248.5	4457.6
5	3275.6	3459.3	3647.9	3841.7	4040.6	4244.5	4453.5
6	3276.8	3460.2	3648.5	3842.0	4041.4	4244.9	4452.5
7	3274.3	3457.5	3646.0	3839.4	4037.5	4241.2	4449.6
8	3271.1	3454.1	3642.3	3835.6	4033.9	4237.2	4445.6
9	3269.0	3452.0	3640.1	3833.3	4031.5	4234.8	4443.0
10	3270.5	3453.2	3642.6	3833.5	4034.4	4236.3	4446.1
11	3269.5	3452.1	3640.7	3832.2	4031.8	4233.7	4443.2
12	3266.9	3449.5	3637.7	3830.4	4028.1	4231.4	4439.2
13	3268.6	3450.9	3643.5	3839.7	4037.9	4239.3	4446.2
14	3292.6	3477.5	3667.5	3862.7	4062.9	4268.3	4478.8
15	3282.4	3466.3	3655.2	3849.3	4048.4	4252.5	4461.5
16	3279.1	3462.7	3651.4	3845.3	4044.2	4248.2	4457.2
17	3274.2	3457.8	3646.5	3840.2	4039.0	4242.9	4451.8
18	3271.1	3454.4	3643.1	3836.5	4035.2	4238.9	4447.7
19	3272.2	3455.3	3643.5	3836.8	4035.1	4238.4	4446.8
20	3269.9	3452.7	3641.1	3834.6	4032.3	4235.6	4443.9
21	3266.4	3449.4	3637.4	3830.5	4028.6	4231.7	4439.9
22	3264.4	3447.3	3635.2	3828.2	4026.3	4229.3	4437.4
23	3266.1	3449.4	3636.1	3831.3	4027.9	4233.5	4439.5
24	3265.1	3448.4	3635.2	3828.2	4026.0	4228.9	4436.6
25	3262.2	3444.9	3632.4	3825.5	4022.9	4226.4	4433.6

TABLE 19(b) (CONTINUED)

CONFIG	Z=40	Z=41	Z=42	Z=43	Z=44	Z=45	Z=46
26	3247.9	3455.7	3634.6	3834.5	4030.9	4234.9	4442.0
27	3237.2	3471.9	3661.8	3856.7	4056.7	4261.9	4472.2
28	3277.1	3465.7	3649.5	3843.3	4042.2	4246.1	4454.9
29	3273.6	3457.1	3645.7	3839.3	4038.1	4241.8	4450.6
30	3258.9	3452.3	3641.8	3834.3	4032.9	4236.6	4445.3
31	3268.7	3449.7	3637.3	3831.7	4029.1	4232.7	4441.2
32	3267.0	3449.9	3637.9	3831.0	4029.0	4232.1	4440.3
33	3264.8	3447.4	3635.4	3828.2	4026.4	4229.3	4437.4
34	3261.2	3444.7	3631.8	3824.7	4022.6	4225.5	4433.5
35	3259.2	3441.9	3629.7	3822.4	4020.2	4223.1	4431.0
36	3262.7	3445.3	3632.2	3824.3	4022.9	4226.3	4433.6
37	3264.2	3442.6	3629.9	3821.7	4020.8	4222.4	4430.2
38	3257.2	3439.7	3627.1	3819.7	4017.2	4219.6	4427.1
39	3258.7	3456.7	3624.8	3823.6	4012.1	4222.7	4420.9
40	3279.2	3462.2	3650.3	3843.4	4041.5	4244.6	4452.6
41	3278.3	3461.4	3649.4	3842.6	4040.7	4243.6	4451.7
42	3275.2	3458.1	3646.1	3839.6	4037.1	4240.1	4448.1
43	3272.8	3455.7	3643.7	3836.7	4034.7	4237.7	4445.8
44	3274.9	3453.3	3641.7	3833.2	4033.7	4233.1	4440.5
45	3259.7	3451.6	3639.5	3831.4	4029.1	4231.4	4438.5
46	3266.8	3449.2	3636.5	3828.9	4026.2	4228.6	4435.9
47	3264.6	3446.9	3634.2	3826.5	4023.8	4226.9	4433.3
48	3265.5	3447.9	3634.9	3822.0	4025.3	4229.4	4430.5
49	3263.9	3446.9	3633.3	3824.1	4022.4	4225.4	4430.5
50	3261.3	3443.9	3631.3	3822.7	4019.8	4222.2	4428.5

TABLE 19(b) (CONTINUED)

CONFIG	Z=40	Z=41	Z=42	Z=43	Z=44	Z=45	Z=46
51	3267.8	3437.7	3646.8	3834.2	4030.1	4239.2	4418.8
52	3287.0	3471.7	3661.5	3836.4	4056.5	4261.6	4471.9
53	3274.2	3457.1	3645.0	3837.9	4035.8	4238.7	4446.5
54	3277.4	3461.0	3649.8	3843.6	4042.5	4246.4	4455.3
55	3268.9	3451.6	3639.2	3831.9	4029.6	4232.3	4440.0
56	3268.0	3450.6	3638.3	3831.1	4028.9	4231.3	4438.8
57	3274.0	3457.5	3646.0	3839.7	4038.4	4242.2	4451.0
58	3263.5	3446.0	3633.4	3826.1	4023.6	4225.9	4433.2
59	3263.4	3445.9	3633.5	3826.1	4023.8	4226.2	4433.7
60	3269.2	3452.6	3641.1	3834.6	4033.2	4236.9	4445.6
61	3258.9	3441.2	3628.6	3821.0	4018.5	4220.9	4428.1
62	3260.1	3442.5	3629.9	3822.4	4019.9	4222.3	4429.6
63	3266.0	3449.3	3637.6	3831.0	4029.4	4233.0	4441.5
64	3255.6	3437.8	3625.1	3817.4	4014.7	4216.9	4424.0
65	3260.6	3443.0	3630.1	3822.2	4019.3	4221.1	4428.0
66	3267.3	3450.2	3638.2	3831.3	4029.3	4232.5	4440.6
67	3256.2	3438.4	3625.3	3817.3	4014.1	4215.8	4422.5
68	3258.6	3440.6	3627.6	3819.6	4016.5	4218.4	4425.2
69	3264.9	3447.8	3635.8	3828.6	4026.9	4229.8	4437.8
70	3254.4	3435.8	3622.6	3814.7	4011.6	4213.4	4419.7
71	3255.3	3437.2	3624.1	3816.1	4012.9	4214.7	4421.5
72	3261.6	3444.3	3632.2	3825.0	4022.9	4225.9	4433.9
73	3250.9	3432.7	3619.4	3811.1	4007.8	4209.5	4416.0
74	3253.2	3435.0	3621.9	3813.7	4010.6	4212.2	4418.8
75	3259.6	3442.3	3630.3	3822.8	4020.6	4223.4	4431.3

TABLE 19(b) (CONTINUED)

CONFIG	Z=40	Z=41	Z=42	Z=43	Z=44	Z=45	Z=46
76	3248.9	3437.5	3617.2	3808.9	4005.5	4207.9	4413.5
77*	3258.7	3434.1	3625.6	3816.4	4014.8	4214.8	4418.7
78	3262.6	3443.9	3632.7	3826.4	4023.9	4225.8	4433.2
79*	3252.3	3428.3	3621.9	3809.0	4005.4	4210.9	4411.8
80	3250.5	3434.3	3621.2	3812.7	4008.8	4211.8	4419.3
81	3260.2	3443.1	3630.7	3823.4	4020.8	4222.8	4430.7
82	3249.0	3431.7	3620.6	3808.0	4005.9	4206.5	4413.5
83	3250.7	3432.8	3619.2	3810.9	4006.8	4208.7	4414.9
84	3257.4	3439.9	3627.4	3819.8	4017.5	4220.1	4427.7
85	3246.3	3427.8	3614.7	3805.8	4002.1	4203.7	4409.3
86*	3264.6	3438.2	3631.8	3825.9	4021.6	4209.9	4419.8
87	3238.1	3425.1	3631.8	3820.5	4019.4	4225.8	4426.4
88*	3223.6	3448.7	3638.4	3815.8	3998.5	4207.6	4391.5
89	3282.0	3466.4	3656.1	3854.8	4046.7	4255.6	4465.7
90	3276.7	3451.0	3654.4	3844.9	4044.5	4249.2	4459.1
91	3268.1	3457.7	3636.3	3831.8	4028.7	4231.3	4439.0
92	3272.4	3455.9	3644.4	3838.0	4036.7	4240.4	4449.1
93	3263.1	3446.6	3633.0	3825.5	4023.0	4225.4	4432.9
94	3267.2	3454.5	3638.8	3832.1	4030.6	4234.1	4442.5
95	3257.0	3439.3	3626.5	3818.7	4015.9	4218.2	4425.5
96	3262.6	3446.1	3632.6	3825.2	4022.6	4224.9	4432.2
97	3259.0	3452.7	3640.7	3834.1	4032.6	4236.2	4444.8
98	3258.8	3447.7	3628.0	3822.5	4017.8	4219.9	4427.0
99	3263.7	3446.8	3635.4	3828.2	4026.5	4229.9	4438.2
100	3253.2	3435.3	3622.3	3814.5	4011.5	4213.5	4421.4

TABLE 19(b) (CONTINUED)

CONFIG	Z=40	Z=41	Z=42	Z=43	Z=44	Z=45	Z=46
101	3258.7	3442.4	3627.8	3820.1	4017.5	4219.9	4427.2
102	3264.3	3447.5	3633.7	3829.1	4027.5	4231.0	4439.5
103	3253.9	3436.1	3623.2	3815.5	4012.7	4214.9	4421.9
104	3259.7	3442.7	3631.1	3823.2	4021.4	4224.7	4433.0
105	3248.6	3431.6	3617.5	3809.5	4006.5	4208.5	4415.4
106	3254.8	3437.7	3624.3	3816.5	4013.8	4216.0	4423.1
107	3261.1	3444.2	3632.3	3825.5	4023.7	4227.1	4435.5
108	3250.8	3432.8	3619.8	3812.0	4009.0	4211.1	4419.0
109	3256.9	3438.8	3626.7	3819.6	4017.7	4220.8	4429.0
110	3245.6	3427.4	3614.2	3806.1	4002.9	4204.7	4411.5
111	3255.7	3437.5	3624.4	3816.3	4013.1	4214.8	4421.5
112	3262.4	3445.1	3632.9	3825.8	4023.6	4226.5	4434.6
113	3251.6	3433.2	3620.4	3811.7	4008.4	4209.9	4416.4
114	3257.2	3439.7	3627.3	3820.0	4017.6	4220.3	4428.1
115	3246.3	3427.7	3614.3	3805.6	4002.3	4203.6	4409.8
116	3253.4	3434.9	3621.7	3813.7	4010.4	4212.4	4418.5
117	3260.1	3442.7	3630.4	3823.1	4021.1	4223.8	4431.8
118	3249.3	3431.6	3617.5	3809.8	4005.9	4207.4	4413.4
119	3254.8	3437.3	3624.9	3817.4	4015.0	4217.6	4425.3
120	3244.3	3425.6	3611.7	3803.3	3999.7	4201.2	4406.9
121	3253.1	3431.8	3618.4	3814.2	4006.8	4208.5	4414.9
122	3254.7	3439.3	3627.9	3819.6	4017.3	4220.1	4427.8
123	3244.9	3427.6	3614.1	3805.7	4002.2	4203.6	4409.9
124	3251.5	3433.9	3621.4	3813.8	4011.3	4213.8	4421.4
125	3240.9	3422.1	3608.4	3799.7	3996.0	4197.4	4403.5

TABLE 19(b) (CONTINUED)

CONFIG	Z=40	Z=41	Z=42	Z=43	Z=44	Z=45	Z=46
126	3248.0	3429.7	3616.3	3808.4	4004.5	4206.0	4412.4
127	3254.7	3437.2	3624.8	3817.4	4015.0	4217.6	4425.3
128	3244.1	3428.5	3612.7	3803.5	3999.9	4201.2	4407.5
129	3249.6	3431.9	3619.2	3811.6	4009.0	4211.4	4418.9
130	3238.9	3421.2	3606.4	3797.6	3993.8	4194.9	4401.6
131*	3250.2	3429.1	3619.2	3812.0	4007.0	4207.4	4413.4
132	3257.5	3439.2	3627.4	3819.6	4017.8	4220.9	4427.1
133*	3244.1	3424.6	3613.6	3806.8	4003.9	4202.3	4411.8
134	3252.1	3434.6	3621.0	3814.1	4011.0	4213.6	4420.3
135	3238.1	3421.9	3606.4	3802.2	3993.8	4197.3	4404.1
136	3247.5	3431.2	3619.8	3807.9	4002.1	4206.9	4413.2
137	3254.9	3437.6	3625.2	3817.6	4015.1	4217.1	4425.3
138	3242.1	3425.7	3613.1	3805.2	3998.6	4201.8	4409.1
139	3250.1	3432.0	3619.2	3811.5	4007.7	4211.0	4418.7
140	3241.4	3419.6	3608.2	3796.6	3994.2	4194.1	4401.2
141	3246.0	3427.3	3613.0	3804.3	4000.5	4202.4	4408.5
142	3252.6	3434.0	3622.3	3814.5	4011.9	4214.3	4421.7
143	3241.8	3422.7	3609.4	3800.7	3996.8	4199.0	4403.5
144	3247.6	3429.7	3616.7	3809.7	4006.0	4207.9	4415.2
145	3236.8	3417.6	3603.6	3794.4	3990.6	4191.3	4397.5
146*	3246.4	3428.6	3629.7	3816.3	4024.0	4203.3	4418.4
147	3241.9	3441.2	3624.0	3814.0	4005.7	4214.1	4423.2
148*	3247.8	3447.3	3646.0	3843.7	4016.7	4184.8	4390.5
149	3245.3	3437.3	3622.3	3802.5	4006.1	4216.1	4406.5
150	3239.5	3464.4	3604.6	3804.3	4015.4	4169.6	4372.3

TABLE 19(b) (CONTINUED)

CONFIG	Z=47	Z=48	Z=49	Z=50	Z=51	Z=52	Z=53
1	4671.7	4921.9	5147.9	5379.0	5615.2	5856.6	6103.0
2	4681.6	4931.7	5128.9	5355.2	5589.9	5829.7	6074.6
3	4677.1	4895.4	5127.7	5351.1	5584.6	5824.3	6068.9
4	4671.7	4897.9	5115.2	5344.6	5579.0	5818.4	6062.9
5	4667.5	4886.6	5111.7	5340.0	5574.2	5813.6	6058.0
6	4666.0	4894.5	5108.2	5336.9	5570.6	5809.4	6053.2
7	4663.1	4881.5	5105.1	5333.8	5567.5	5806.2	6049.9
8	4658.9	4877.4	5101.9	5329.3	5563.0	5801.5	6045.2
9	4656.3	4874.5	5098.4	5326.4	5559.9	5798.4	6042.0
10	4658.8	4874.3	5096.8	5327.0	5559.1	5801.9	6040.6
11	4653.0	4873.1	5096.5	5324.1	5557.6	5795.9	6039.8
12	4652.7	4871.1	5093.3	5321.0	5554.3	5792.8	6035.6
13	4671.6	4867.7	5085.9	5326.6	5552.6	5783.1	6056.9
14	4694.3	4915.0	5141.8	5371.7	5607.7	5848.9	6095.1
15	4675.6	4894.3	5119.1	5348.6	5583.1	5822.7	6067.4
16	4671.2	4891.2	5114.4	5343.6	5577.9	5817.4	6061.9
17	4665.8	4884.8	5108.9	5338.1	5572.3	5811.5	6055.8
18	4661.6	4881.4	5104.4	5333.4	5567.5	5806.7	6050.9
19	4660.1	4878.5	5102.0	5330.5	5564.7	5802.6	6046.2
20	4657.2	4875.5	5099.2	5327.5	5560.9	5799.5	6043.0
21	4653.1	4871.3	5094.6	5322.9	5556.3	5794.8	6038.3
22	4651.5	4868.6	5091.8	5320.1	5553.4	5791.7	6035.1
23	4653.6	4871.2	5093.0	5323.1	5553.4	5791.4	6035.2
24	4649.1	4867.2	5089.2	5317.7	5551.3	5788.6	6033.1
25	4646.5	4864.3	5087.0	5315.0	5547.8	5785.9	6029.0

TABLE 19(b) (CONTINUED)

CONFIG	Z=47	Z=48	Z=49	Z=50	Z=51	Z=52	Z=53
26	4652.4	4861.1	5082.3	5302.1	5548.1	5786.8	6043.7
27	4657.5	4868.9	5133.6	5364.3	5601.1	5841.0	6087.1
28	4668.9	4887.9	5112.0	5341.2	5575.5	5815.0	6059.4
29	4664.4	4883.7	5107.2	5336.2	5570.4	5809.6	6053.9
30	4659.1	4877.9	5101.8	5330.7	5564.7	5803.8	6047.9
31	4654.9	4873.6	5097.3	5326.2	5561.1	5799.0	6043.0
32	4653.4	4871.7	5094.9	5323.2	5556.5	5794.9	6038.3
33	4651.5	4868.7	5091.9	5320.1	5553.5	5791.8	6035.2
34	4646.5	4864.5	5087.6	5315.7	5548.9	5787.2	6030.4
35	4643.9	4861.8	5084.8	5312.9	5546.0	5784.1	6027.3
36	4647.3	4864.9	5086.8	5315.4	5547.2	5783.1	6027.9
37	4643.0	4861.7	5083.6	5311.6	5543.6	5780.9	6025.2
38	4641.1	4857.1	5078.1	5307.9	5540.6	5778.3	6021.6
39	4651.7	4869.3	5088.1	5317.6	5546.3	5764.6	6024.6
40	4665.7	4883.8	5107.7	5335.1	5566.3	5806.5	6049.7
41	4664.7	4882.9	5106.1	5334.3	5567.5	5805.7	6048.7
42	4661.1	4879.1	5102.2	5330.2	5563.3	5801.4	6044.4
43	4658.8	4876.9	5100.6	5328.1	5561.2	5799.2	6042.3
44	4662.9	4879.4	5092.7	5320.2	5552.5	5789.9	6032.1
45	4651.0	4868.7	5079.9	5317.8	5551.0	5787.9	6029.8
46	4648.1	4865.5	5087.8	5315.1	5547.4	5784.7	6026.8
47	4645.8	4862.7	5085.1	5312.2	5544.4	5781.6	6023.8
48	4643.7	4861.4	5078.6	5313.1	5537.3	5783.0	6023.6
49	4642.8	4864.2	5083.1	5317.7	5545.1	5777.9	6029.8
50	4644.7	4857.9	5079.5	5306.6	5537.6	5775.3	6016.7

TABLE 19(b) (CONTINUED)

CONFIG	Z=47	Z=48	Z=49	Z=50	Z=51	Z=52	Z=53
51	4639.2	4939.9	5273.7	5306.3	5516.4	5785.4	5975.6
52	4597.2	4957.7	5173.3	5363.9	5599.7	5843.7	6086.7
53	4659.5	4877.4	5177.3	5328.3	5561.3	5799.3	6042.3
54	4669.2	4888.2	5112.2	5341.5	5575.9	5815.3	6059.7
55	4652.8	4871.5	5193.2	5321.7	5553.8	5791.6	6034.4
56	4651.3	4868.9	5191.7	5319.6	5552.6	5790.4	6033.0
57	4664.7	4883.6	5207.6	5336.6	5570.8	5810.0	6054.2
58	4645.5	4863.1	5185.5	5313.3	5546.4	5783.6	6026.1
59	4646.2	4863.7	5186.3	5314.0	5546.8	5784.5	6027.1
60	4659.4	4878.2	5202.1	5331.0	5565.3	5804.1	6048.2
61	4647.4	4857.8	5180.2	5307.7	5541.2	5777.7	6020.3
62	4642.0	4859.3	5181.9	5309.4	5542.1	5779.7	6022.3
63	4655.2	4873.8	5197.5	5326.4	5560.3	5799.3	6043.3
64	4636.3	4853.9	5175.7	5303.1	5535.6	5773.0	6015.4
65	4639.9	4856.7	5176.7	5305.8	5537.8	5774.8	6016.8
66	4653.8	4870.0	5195.2	5323.5	5556.9	5795.2	6038.6
67	4634.3	4853.0	5172.6	5299.6	5531.4	5768.1	6009.9
68	4636.9	4854.0	5175.7	5302.7	5535.1	5771.4	6013.6
69	4650.9	4869.1	5192.2	5320.7	5553.9	5792.1	6035.5
70	4631.3	4848.1	5170.4	5296.6	5529.0	5764.8	6006.5
71	4633.1	4849.3	5171.7	5298.5	5530.5	5767.4	6009.1
72	4646.9	4864.9	5188.0	5316.1	5549.3	5787.5	6030.8
73	4627.6	4844.4	5166.7	5292.4	5524.6	5760.8	6002.3
74	4638.5	4847.0	5168.3	5295.5	5527.5	5764.2	6005.9
75	4644.3	4862.3	5185.2	5313.2	5546.3	5784.5	6027.6

TABLE 19(b) (CONTINUED)

CONFIG	Z=47	Z=48	Z=49	Z=50	Z=51	Z=52	Z=53
76	4624.9	4841.3	5062.9	5239.5	5521.1	5757.7	5999.2
77*	4631.6	4847.2	5067.1	5292.1	5525.6	5767.8	6006.4
78	4647.8	4863.7	5085.1	5315.8	5546.5	5784.2	6027.5
79*	4629.6	4841.7	5059.6	5291.4	5518.7	5757.5	5998.1
80	4629.8	4849.2	5057.7	5294.8	5527.6	5760.8	6002.5
81	4643.1	4861.3	5083.1	5312.3	5544.2	5780.7	6026.4
82	4622.4	4841.9	5062.8	5286.7	5521.1	5756.6	5996.5
83	4626.6	4843.1	5064.6	5294.2	5521.2	5758.4	5998.8
84	4647.7	4859.7	5081.4	5318.3	5547.8	5778.6	6021.9
85	4621.1	4836.3	5058.6	5284.2	5515.4	5752.4	5992.9
86*	4648.8	4873.3	5108.	5268.2	5525.1	5796.6	6040.5
87	4641.1	4863.2	5085.7	5328.1	5531.8	5762.1	6032.6
88*	4667.9	4868.3	5054.1	5296.4	5529.5	5775.2	5951.2
89	4687.8	4911.1	5126.6	5357.1	5592.6	5833.3	6079.1
90	4674.9	4864.1	5119.3	5349.5	5584.9	5825.4	6071.1
91	4661.7	4869.4	5092.2	5319.9	5552.7	5794.4	6033.2
92	4662.9	4881.6	5105.5	5334.6	5568.7	5807.9	6052.2
93	4645.5	4863.1	5085.6	5313.1	5545.6	5783.2	6025.8
94	4656.1	4874.7	5098.4	5327.3	5561.1	5806.1	5944.1
95	4637.8	4855.1	5077.4	5304.7	5537.9	5774.4	6016.7
96	4644.5	4861.9	5084.5	5312.2	5544.9	5782.5	6024.9
97	4658.4	4877.1	5100.9	5329.7	5563.7	5802.7	6046.7
98	4639.1	4856.4	5078.2	5306.3	5538.8	5776.2	6018.5
99	4651.7	4870.2	5093.7	5322.3	5556.1	5794.9	6038.7
100	4632.4	4849.4	5071.6	5299.9	5531.2	5768.4	6010.4

TABLE 19(b) (CONTINUED)

CONFIG	Z=47	Z=48	Z=49	Z=50	Z=51	Z=52	Z=53
101	4639.5	4886.8	5179.2	5316.7	5539.2	5776.7	6019.2
102	4653.1	4871.7	5165.4	5324.2	5548.1	5786.8	6040.7
103	4634.1	4881.2	5173.5	5307.8	5533.1	5770.4	6012.7
104	4646.4	4864.8	5188.3	5316.9	5553.5	5789.1	6032.8
105	4627.3	4844.7	5166.3	5293.5	5525.6	5762.7	6004.7
106	4635.3	4853.5	5174.9	5302.2	5534.6	5772.1	6014.4
107	4649.9	4867.4	5191.1	5319.6	5553.3	5792.1	6035.9
108	4631.3	4847.1	5169.2	5296.4	5528.6	5765.9	6008.4
109	4642.2	4861.5	5183.9	5312.3	5545.8	5784.4	6028.4
110	4623.4	4841.2	5162.2	5289.1	5521.1	5758.1	6000.5
111	4633.3	4849.9	5171.5	5298.7	5531.4	5767.1	6009.7
112	4647.5	4865.3	5188.6	5316.7	5549.9	5788.3	6031.2
113	4628.2	4844.5	5166.4	5292.8	5524.4	5761.2	6002.4
114	4641.8	4858.7	5181.5	5311.5	5542.4	5780.3	6023.4
115	4621.2	4837.6	5159.1	5288.5	5516.9	5753.2	5994.5
116	4635.2	4847.1	5168.7	5295.5	5527.9	5764.3	6005.3
117	4644.7	4862.6	5185.6	5313.7	5546.9	5785.4	6028.2
118	4625.1	4841.5	5163.3	5289.9	5521.6	5758.1	5999.4
119	4638.1	4855.7	5179.5	5316.4	5539.4	5777.3	6020.3
120	4619.3	4834.9	5156.1	5282.1	5514.1	5754.4	5991.3
121	4626.5	4843.1	5164.7	5291.3	5522.9	5759.7	6001.1
122	4641.6	4858.5	5181.4	5309.3	5542.3	5780.3	6023.4
123	4621.3	4837.6	5159.1	5285.4	5517.1	5753.6	5994.9
124	4634.1	4851.7	5174.4	5302.1	5534.9	5772.7	6015.6
125	4614.6	4831.5	5152.1	5278.3	5509.5	5745.9	5986.9

TABLE 19(b) (CONTINUED)

CONFIG	Z=47	Z=48	Z=49	Z=50	Z=51	Z=52	Z=53
126	4623.9	4847.3	5061.9	5288.5	5520.1	5756.6	5998.1
127	4638.1	4859.8	5078.6	5306.5	5539.4	5777.3	6020.3
128	4618.8	4835.[illegible]	5056.4	5282.8	5514.2	5750.6	5991.9
129	4631.4	4849.[illegible]	5071.6	5299.3	5532.[illegible]	5769.7	6012.5
130	4612.1	4828.2	5049.4	5275.6	5506.8	5742.9	5984.[illegible]
131*	4626.2	4842.4	5061.7	5285.4	5518.2	5759.3	5991.[illegible]
132	4647.8	4867.4	5079.9	5309.1	5537.8	5778.6	6021.1
133*	4631.4	4839.2	5058.2	5281.3	5512.[illegible]	5755.4	5995.3
134	4634.1	4857.[illegible]	5072.9	5304.4	5532.6	5770.2	6013.9
135	4611.1	4827.4	5047.5	5269.4	5503.9	5748.6	5985.4
136	4623.1	4844.[illegible]	5067.1	5284.2	5518.1	5754.1	5994.4
137	4636.7	4854.8	5077.[illegible]	5305.5	5537.7	5774.6	6018.5
138	4616.[illegible]	4833.5	5055.1	5279.8	5513.9	5747.3	5986.6
139	4637.3	4848.[illegible]	5073.3	5298.[illegible]	5531.4	5767.5	6010.2
140	4617.5	4827.9	5049.7	5272.2	5506.6	5741.[illegible]	5981.9
141	4619.[illegible]	4839.[illegible]	5057.4	5283.7	5514.2	5751.[illegible]	5992.[illegible]
142	4634.2	4851.4	5074.[illegible]	5301.3	5534.1	5771.5	6014.[illegible]
143	4614.4	4834.[illegible]6	5052.5	5278.[illegible]	5509.2	5745.3	5985.7
144	4627.4	4844.7	5066.9	5294.3	5526.8	5764.1	6006.4
145	4647.8	4823.8	5044.8	5270.2	5506.5	5737.[illegible]	5977.5
146*	4644.6	4836.4	5073.1	5288.3	5538.3	5749.5	5993.1
147	4645.9	4857.[illegible]	5068.5	5297.[illegible]	5532.9	5778.[illegible]	6016.2
148*	4617.9	4831.[illegible]	5064.3	5306.8	5515.3	5766.7	5995.4
149	4631.7	4849.[illegible]	5070.1	5291.1	5536.[illegible]	5767.2	6012.2
150	4626.3	4859.[illegible]	5047.6	5263.1	5497.3	5764.7	5982.4

TABLE 19(b) (CONTINUED)

CONFIG	Z=54	Z=55	Z=56	Z=57	Z=58	Z=59	Z=60
1	6354.6	6611.3	6873.1	7147.0	7412.1	7689.0	7971.2
2	6324.4	6579.1	6838.9	7113.9	7373.9	7649.1	7929.2
3	6318.7	6573.4	6833.1	7108.1	7367.8	7642.8	7922.9
4	6312.5	6567.1	6826.8	7091.5	7361.3	7636.1	7916.1
5	6307.5	6562.1	6821.7	7185.3	7356.3	7630.8	7910.7
6	6302.9	6558.9	6814.7	7178.7	7347.7	7621.7	7901.8
7	6298.7	6552.6	6811.3	7175.0	7344.1	7618.6	7897.4
8	6293.9	6547.6	6806.3	7170.1	7338.9	7612.7	7891.8
9	6290.6	6544.2	6802.9	7166.6	7335.4	7609.1	7887.9
10	6289.8	6543.5	6801.6	7164.1	7332.8	7606.4	7886.6
11	6287.9	6542.4	6799.8	7162.0	7329.8	7603.8	7885.4
12	6284.1	6537.2	6795.2	7158.6	7327.1	7599.8	7878.7
13	6278.9	6532.2	6791.5	7160.5	7319.7	7594.2	7896.7
14	6346.5	6603.1	6864.5	7131.2	7403.9	7679.9	7961.9
15	6317.4	6571.6	6831.2	7196.1	7365.8	7640.8	7920.8
16	6311.4	6565.9	6825.5	7194.2	7359.8	7634.6	7914.5
17	6305.2	6559.6	6819.1	7183.7	7353.2	7627.9	7907.6
18	6301.2	6554.6	6814.1	7178.5	7348.0	7622.6	7902.2
19	6294.8	6548.5	6807.2	7171.0	7339.8	7613.6	7892.5
20	6291.4	6545.3	6803.8	7167.3	7336.3	7610.3	7888.9
21	6286.7	6540.2	6798.8	7162.4	7331.0	7604.7	7883.5
22	6283.5	6536.9	6795.4	7159.0	7327.5	7601.1	7879.7
23	6282.3	6537.5	6794.2	7155.7	7325.8	7601.7	7878.9
24	6280.2	6534.0	6792.4	7154.6	7321.4	7596.3	7874.9
25	6276.8	6529.5	6788.1	7150.9	7319.1	7591.9	7869.9

TABLE 19(b) (CONTINUED)

CONFIG	Z=54	Z=55	Z=56	Z=57	Z=58	Z=59	Z=60
25	6267.7	6533.3	6794.4	7047.8	7295.5	7531.8	7892.0
27	6338.2	6594.5	6855.9	7122.3	7393.9	7677.6	7952.4
28	6308.8	6563.1	6822.6	7087.2	7356.8	7631.5	7911.5
29	6303.2	6557.3	6816.9	7081.3	7351.8	7625.4	7905.1
30	6297.1	6551.1	6810.6	7074.9	7344.3	7618.7	7898.3
31	6292.1	6546.3	6805.5	7069.9	7339.1	7613.5	7892.9
32	6286.8	6541.2	6798.7	7062.3	7331.1	7604.6	7883.2
33	6283.8	6537.	6795.4	7058.7	7327.4	7601.1	7879.9
34	6278.7	6532.	6790.4	7053.8	7322.2	7595.7	7874.3
35	6276.5	6528.7	6787.	7050.3	7318.7	7592.1	7870.5
36	6274.	6525.3	6787.3	7048.2	7317.8	7590.6	7870.
37	6272.1	6525.9	6783.5	7046.9	7312.5	7587.	7865.3
38	6269.	6521.6	6779.4	7042.4	7310.5	7582.9	7861.
39	6266.5	6519.5	6776.4	7040.1	7309.6	7584.5	7868.7
40	6297.9	6551.1	6809.3	7072.5	7340.9	7614.	7892.2
41	6296.8	6549.9	6808.2	7071.5	7340.9	7613.3	7891.6
42	6292.5	6545.5	6803.6	7065.7	7334.8	7608.	7886.1
43	6298.4	6548.5	6811.5	7064.6	7332.7	7605.8	7883.9
44	6279.4	6531.8	6799.1	7051.7	7319.0	7591.2	7868.4
45	6277.2	6529.2	6797.1	7049.1	7317.1	7589.1	7865.9
46	6274.1	6526.3	6793.5	7045.8	7312.9	7585.4	7862.5
47	6271.9	6523.1	6791.3	7042.4	7309.5	7581.7	7858.8
48	6261.4	6512.8	6767.7	7037.9	7308.4	7575.7	7857.7
49	6265.6	6516.7	6777.9	7035.9	7303.7	7573.2	7846.4
50	6262.4	6514.5	6771.8	7032.9	7299.4	7572.3	7847.5

TABLE 19(b) (CONTINUED)

CONFIG	Z=54	Z=55	Z=56	Z=57	Z=58	Z=59	Z=60
51	6247.2	6519.1	6801.1	7133.6	7317.5	7572.6	7861.3
52	6237.9	6494.1	6855.8	7121.9	7393.5	7670.2	7952.5
53	6297.3	6543.3	6811.3	7164.4	7332.4	7585.5	7883.6
54	6359.2	6563.6	6823.7	7187.6	7357.2	7631.9	7911.8
55	6282.2	6535.9	6792.5	7135.7	7323.6	7596.4	7874.3
56	6287.5	6533.1	6791.9	7133.5	7321.5	7594.4	7872.4
57	6313.5	6557.9	6817.3	7181.7	7351.2	7625.8	7905.5
58	6273.4	6528.9	6783.4	7145.9	7313.7	7586.5	7864.2
59	6274.7	6527.2	6784.9	7147.3	7315.2	7587.6	7865.5
60	6297.4	6551.6	6811.9	7175.2	7344.6	7619.4	7899.6
61	6267.6	6519.9	6777.3	7139.7	7307.2	7579.6	7857.2
62	6269.8	6522.3	6779.7	7142.2	7309.8	7582.4	7860.1
63	6292.4	6546.5	6805.8	7170.4	7339.3	7613.7	7893.2
64	6260.7	6515.1	6772.3	7134.7	7302.1	7574.4	7851.9
65	6263.5	6518.2	6773.7	7134.9	7301.9	7572.7	7849.5
66	6287.1	6544.6	6799.1	7162.6	7331.3	7604.9	7883.6
67	6256.6	6513.1	6764.7	7126.6	7293.2	7564.8	7841.5
68	6259.2	6511.9	6768.8	7134.6	7298.1	7569.6	7846.1
69	6283.9	6537.2	6795.7	7159.1	7327.9	7601.7	7880.3
70	6253.3	6504.9	6761.9	7123.2	7290.7	7561.9	7838.4
71	6255.7	6507.4	6764.1	7125.5	7292.2	7564.1	7840.9
72	6279.1	6532.4	6789.6	7154.2	7322.6	7596.1	7874.7
73	6248.9	6501.3	6756.6	7118.9	7284.5	7556.3	7833.4
74	6252.6	6504.1	6760.6	7122.2	7288.7	7560.4	7837.8
75	6275.9	6529.1	6787.4	7151.7	7319.1	7592.4	7871.9

TABLE 19(b) (CONTINUED)

CONFIG	Z=54	Z=55	Z=56	Z=57	Z=58	Z=59	Z=60
76	6245.6	6497.	6753.4	7014.2	7281.1	7552.6	7829.1
77*	6247.5	6508.	6761.	7023.7	7287.8	7553.	7831.2
78	6276.	6537.	6788.1	7045.8	7317.5	7592.4	7871.1
79*	5244.1	65 5.3	6758.7	7014.2	7277.9	7549.4	7821.8
8	6253.4	6498.	6758.1	7 16.3	7283.8	7552.3	7828.2
81	6273.1	6527.2	6784.	7045.6	7313.2	7587.2	7867.3
82	6243.8	6493.	6753.	7017.9	7272.6	7544.2	7823.
83	6245.5	6496.7	6753.2	7018.3	7279.1	7552.3	7826.9
84	6269.3	6521.8	678 .	7042.8	7311.1	7583.4	7861.4
85	6238.6	649 .3	5744.2	7 36.7	7271.9	7544.2	7819.4
86*	6264.1	6483.5	674 .2	7048.5	730 .1	7534.8	7868.9
87	6265.2	6529.1	678 .3	7035.7	73 9.5	7577.1	786 .1
88*	6274.7	6463.4	6779.7	7 31.8	7286.8	7532.	7882.
89	633 .1	6586.1	6847.3	7113.5	7384.9	7661.4	7943.6
9	6321.8	6577.6	6838.6	71 4.6	7375.8	7652.1	7933.5
91	6281.3	6533.9	6791.6	7054.4	7322.2	7595.1	7872.9
92	63 1.4	6555.5	6814.9	7 76.2	7348.7	7623.2	790 .9
93	6273.4	6526.	6783.6	7046.2	7313.9	7586.5	7864.2
94	6293.2	6547.2	68 6.2	7076.4	7339.7	7614.	7893.5
95	6264.1	6516.8	6773.9	7036.3	73 3.7	7576.1	7853.6
96	6272.1	6524.6	6782.2	7 44.7	7312.5	7585.2	7863.
97	6295.8	655 .	68 9.2	7073.4	7342.8	7617.1	7896.6
98	6268.7	6517.9	6775.2	7137.6	73 5.2	7577.8	7855.3
99	6287.6	6541.6	68 4.6	7064.6	7333.7	76 7.9	7887.2
1	6257.4	65 9.4	6766.5	7 28.8	7296.2	7548.5	7845.9

TABLE 19(b) (CONTINUED)

CONFIG	Z=54	Z=55	Z=56	Z=57	Z=58	Z=59	Z=60
101	6266.5	6518.8	6776.2	7038.5	7306.0	7578.5	7856.1
102	6289.7	6543.7	6802.8	7067.0	7336.2	7610.4	7889.7
103	6259.9	6512.1	6769.2	7031.4	7298.7	7571.1	7849.4
104	6281.6	6535.4	6794.3	7058.2	7327.2	7601.3	7880.4
105	6251.7	6503.6	6760.6	7022.6	7289.7	7561.9	7839.1
106	6261.7	6513.9	6771.2	7033.6	7300.9	7573.4	7850.9
107	6284.8	6538.7	6797.8	7061.8	7331.0	7605.1	7884.4
108	6255.1	6507.2	6764.3	7026.5	7293.7	7565.9	7843.2
109	6276.7	6530.4	6789.2	7053.1	7322.0	7596.0	7875.1
110	6247.0	6498.9	6755.9	7017.8	7284.8	7556.9	7834.0
111	6255.3	6507.1	6763.6	7025.3	7292.9	7563.6	7840.3
112	6279.5	6532.8	6791.1	7054.5	7322.9	7596.4	7874.8
113	6248.9	6501.3	6756.7	7018.2	7284.9	7556.3	7832.7
114	6271.4	6524.8	6782.6	7045.8	7314.0	7587.3	7865.6
115	6240.7	6492.1	6748.2	7009.5	7275.8	7547.2	7823.5
116	6251.7	6503.4	6760.0	7022.2	7288.9	7560.8	7837.1
117	6276.2	6529.6	6787.8	7051.0	7319.4	7593.2	7871.6
118	6245.6	6497.1	6753.5	7015.7	7281.9	7553.2	7830.2
119	6268.2	6521.3	6779.4	7042.4	7311.5	7583.9	7862.3
120	6237.5	6489.7	6745.1	7006.2	7272.9	7544.4	7820.5
121	6247.6	6499.1	6755.5	7016.9	7283.4	7555.1	7831.7
122	6271.5	6524.6	6782.9	7046.0	7314.2	7587.6	7866.0
123	6241.2	6492.4	6748.7	7011.9	7276.3	7547.8	7824.3
124	6263.5	6516.4	6774.4	7037.4	7305.4	7578.5	7856.7
125	6233.1	6484.1	6741.2	7001.4	7267.5	7538.7	7814.9

TABLE 19(b) (CONCLUDED)

CONFIG	Z=54	Z=55	Z=56	Z=57	Z=58	Z=59	Z=60
126	6244.5	6495.8	6752.2	7013.6	7280.0	7551.4	7827.9
127	6268.3	6521.4	6779.5	7042.6	7310.8	7584.0	7862.2
128	6238.1	6489.4	6745.5	7006.7	7272.9	7544.1	7820.5
129	6267.3	6513.1	6771.0	7033.9	7301.9	7574.9	7853.0
130	6237.0	6481.7	6737.1	6998.1	7264.1	7535.2	7811.2
131*	6237.6	6504.6	6749.5	7010.9	7283.7	7545.5	7820.4
132	6265.2	6522.3	6780.5	7040.4	7310.3	7582.6	7861.2
133*	6232.7	6495.4	6744.9	7004.6	7273.5	7542.4	7806.9
134	6259.6	6513.8	6772.6	7033.6	7301.0	7572.5	7852.0
135	6222.3	6486.0	6742.6	6995.7	7263.9	7528.1	7803.1
136	6242.6	6488.3	6749.5	7007.1	7273.2	7545.5	7820.0
137	6265.6	6518.0	6775.7	7041.1	7305.9	7579.3	7858.0
138	6238.2	6484.5	6741.6	6997.3	7269.0	7539.6	7815.0
139	6257.8	6509.9	6767.3	7030.4	7297.9	7576.3	7848.6
140	6227.8	6474.2	6735.0	6991.4	7262.2	7529.3	7804.0
141	6237.6	6488.5	6744.9	7005.7	7271.3	7543.4	7817.1
142	6261.9	6514.3	6771.9	7034.8	7302.5	7575.0	7853.1
143	6231.5	6482.6	6737.7	6998.4	7264.1	7536.1	7811.0
144	6253.8	6506.2	6763.6	7026.1	7293.7	7566.1	7843.9
145	6222.9	6475.2	6729.2	6993.3	7255.4	7526.8	7801.3
146*	6199.8	6438.3	6749.8	7019.1	7304.4	7511.0	7825.2
147	6263.7	6511.7	6782.5	7047.1	7293.7	7575.7	7854.4
148*	6247.3	6483.6	6738.6	7023.0	7258.7	7544.7	7799.2
149	6258.2	6514.2	6764.6	7022.7	7286.2	7572.0	7851.2
150	6224.9	6490.4	6724.9	7166.4	7243.4	7555.5	7874.7

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